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LECTURE II.

Chemical synthesis on a large scale is confined to plants. It is reductive in character, the requisite energy coming from sunlight. In animals, on the whole, the reverse oxidations occur, most of the energy running down to heat. In all living cells this slow oxidation of foodstuffs takes place under the influence of catalysts at a comparatively low temperature. Interposed in this chain of irreversible oxidations are reversible chemical mechanisms which catch and store some of this slow downward flow of energy, the most notable and best-studied being muscle. A muscle cell is like an accumulator on an electric circuit in which the electrical energy is otherwise running away to heat. It stores some portion of it and this portion can subsequently be suddenly let loose to do work. By appropriate arrangements a proportion of this work can be utilised outside the cell but most of it is lost, and the maximum efficiency of the most practised muscular act is only about 20 per cent.

Regulation of Temperature by Varying Production: The Source of Animal Heat.

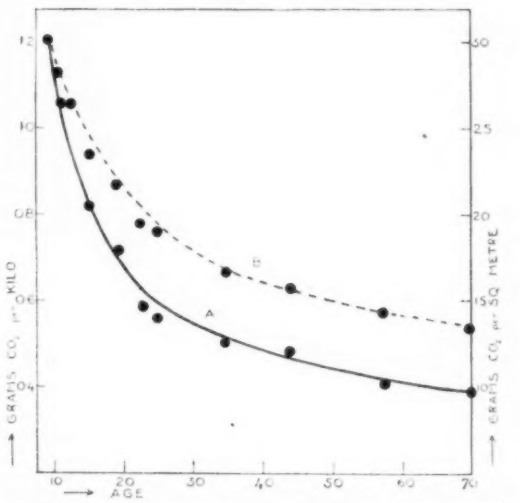
Of recent years cellular oxidations have been much studied outside the body, notably by Batelli and Stern, Harden and Maclean, Thunberg, Warburg, Wels and Grafe.† That the auto-oxidations occurring in an emulsion of tissues in a pot are always the same as occur in the body is, however, unlikely. Separated from the body, the cells of all the different organs and from all sorts of animals, use weight for weight very much the same amount of oxygen at the same temperature, whereas in their normal circumstances their rate of combustion is quite different and, generally speaking, much less. Isolated, auto-oxidation seems to run riot, normally to be controlled. It is held by Grafe that this control, which he calls "damper action," is brought about in some obscure way by means of the sympathetic nervous system.

The rate at which oxidation takes place in resting cells with their circulation intact has been extensively studied by the experimental procedures introduced by Barcroft and Brodie (1906), and for our knowledge on the subject we are indebted to them and their many disciples. The method depends upon the determination of the oxygen in the blood entering and leaving the particular organ and the rate of the circulation. The principal results are collected by Loewy (1925) in his article on the metabolism of individual organs.

Different tissues vary a good deal in the rate at which they use oxygen. Of all the tissues examined, resting muscle uses least and kidney most, weight for weight. The results of different observations vary considerably, but may be summarised by saying that the heat production of a kilogramme of resting muscle is about one large calorie per hour, of liver, pancreas and submaxillary gland, about eight and of kidney 25 kilocalories. Although this has not been satisfactorily established for isolated tissues, the oxygen utilisation of the whole body varies much with age. This is well illustrated by Fig. 9 which is a graph drawn from observations by Sondén and Tigerstedt (1895).

Six to twelve persons of age groups ranging from seven to seventy were enclosed in a large respiration chamber of 3,370 cubic feet capacity for two hours, and the carbon dioxide produced was determined each half hour. The temperature of the chamber was 18 to 20° C. and the individuals were resting. As may be seen from the lower curve of the chart, the combustion rate at seven years of age is, weight for weight of body, twice that at 25 and three times that at 70 years of age. The upper curve shows the same relation reckoned on the basis of body surface. It will be obvious why, apart from their greater activity, children want so much to eat!

Fig. 9.



Influence of age on combustion-rate of man. Upper graph, grammes CO_2 per sq. metre body surface; lower graph, per kilo body-weight, according to age-grouping. From observations by Sonden and Tigerstedt (1895).

The resting gaseous metabolism is also increased by the intake of food. The warming effect of a good meal is familiar to all. This is not due to the extra work performed by the alimentary canal, for plenty of work can be supplied for the stomach and intestines to do by filling the stomach with agar, but this does not appreciably increase the utilisation of oxygen It is a specific effect of food and the explanation for it is still far from clear. The three varieties of food are effective, but with proteins the increased combustion is greater and lasts longer. Fig. 10 illustrates this well-established fact. It is from an experiment by one of my pupils who is an unusually good subject for observations on metabolism. In her case, 600–700 calories in the form of either carbohydrate or protein produced about 30 per cent. rise in the rate of oxygen consumption. With the carbohydrate, the rise occurred more rapidly but lasted less than half the time, so that the total effect is about a third.

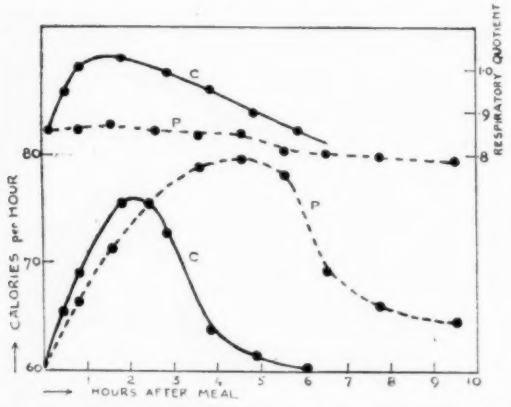
* The Croonian Lectures delivered before the Royal College of Physicians of London on June 12th, 17th, and 19th. Lecture I. was published in The Lancet last week.

† The literature is reviewed by Grafe, Biochem. Zeitschr., 165, 102.

EVIDENCE FOR CHEMICAL REGULATION IN MAN.

Lavoisier (1778), who, by his discovery of oxygen explained the nature of combustion, also proved that oxidation was the source of animal heat, and showed that a cooled man used more oxygen than a warm one. One hundred years later, Voit (1878) studied the effect of external temperature on the rate of combustion of man and found that with a clothed man in still air the external temperature could be varied from 10–25° C. without appreciable change in the amount of carbon dioxide he produced, but as soon as the rate of heat loss increased beyond this, he began to burn more fuel and ultimately to shiver. Speck (1883, 1885) measured the carbon dioxide he produced whilst sitting in a cold bath, but as long as he was able to keep absolutely still he found no significant rise. Rubner (1900) who obtained results very similar to those of Voit was of opinion that the amount of muscular movement, until shivering occurred, was inadequate to account

FIG. 10.



Influence of food on combustion-rate of man. C = effect of 700 calories in form of starch and lactose on metabolism (lower curve) and respiratory quotient (upper curve). P = effect of 650 calories in form of raw steak. Observations by Mrs. Y. M. Gibbs. Weight, 59·2 kilos; height, 177 cm.; age 24. After fasting 14 hours.

for the increased combustion observed and concluded that the extra combustion took place in muscles without motion and in other organs, especially the liver.

In 1890 Loewy (1890) measured the oxygen used over a short period by a number of people before and after removing their clothes and concluded that in all cases in which an intelligent person was completely relaxed, the utilisation of oxygen was no greater, unless they shivered, when it might increase 50–100 per cent. Various criticisms were levelled against this conclusion and six years later Johansson (1896) performed a number of experiments on himself and another, with and without clothes, in a chamber at 15–20°. The experiments lasted one to two hours. Johansson arrived at the same conclusion at Loewy—viz., that unless shivering occurred, there was no increased formation of carbon dioxide; coincident with shivering the carbon dioxide output rose 70–80 per cent. and even to three times its former value. Johansson's results were criticised by Rubner, but not upset, and physiologists settled down for 25 years to the general belief that, unlike animals, man relied upon physical regulation until the fall in temperature of his skin was sufficient to evoke shivering.

In 1914 Leonard Hill recorded some experiments he and Flack had made on the respiratory exchange of eight individuals, firstly, in the laboratory, and then on the roof of the London Hospital, with a cool breeze blowing but at a temperature not cold enough to cause shivering. From Hill's data, I find that the mean oxygen consumption outdoors was 1·4 times what it was indoors. These observations were published in the Reports of the Local Government Board and escaped the attention they deserved until in 1921 Campbell, Hargood-Ash and Hill repeated them, with similar results, and discussed their significance in a paper in the *Journal of Physiology*. Hill's experiments have been criticised on the grounds that the subjects were neither at complete rest nor fasting. This, however, applies to the experiments in comfortable surroundings as well as when exposed. I have no doubt of the substantial accuracy of Hill's conclusions, though the increases in metabolism he obtained are perhaps somewhat high. I have found a rise in oxygen consumption in most subjects as soon as the surface of the body became uncomfortably cold. We both used the Douglas-Haldane method, but in my experiments the subjects were in the post-absorption state and had been at complete rest for some hours, generally all night.

The oxygen consumption in a warm bed was first taken as a standard of reference. Then the clothes were removed and windows opened and a cool winter's breeze (temperature 8–10° C.) allowed to play upon the nearly naked body. The rate of cooling was, therefore, greater than in Hill's clothed subjects. After half an hour's interval, during which the skin temperature of the thighs fell to 25–26° C. and "goose flesh" appeared on the limbs, the respiratory exchange was again measured. Four individuals were the subjects of the experiments, two thin and two well covered. The increase in metabolism varied from 9 to 17 per cent. It was most in the thin persons. On two occasions the experiment was extended until shivering seemed imminent, as there was a tremor on the respiratory rhythm and slight flickering of some muscle bundles. In these cases the increase amounted to 26 and 30 per cent. respectively.

Similar observations have been made by Franke and Gessler (1925). They determined the effect of removing their clothes in a room of which the temperature was 15° C. They found their oxygen combustion increased 12 to 24 per cent. on different occasions although they did not expose themselves sufficiently long to shiver.

Gessler and Laves (1925) made the further interesting observation that 0·3 g. of pyramidon or 30 c.cm. of alcohol obliterated this chemical response after removing clothes.

When Franke and Gessler placed their legs in cold water, a 10 per cent. rise was noticed, but when they did the same to a patient with anæsthesia from a transverse myelitis there was no rise in metabolic rate and the body temperature fell 0·5° C. From this they conclude that cold to the skin is a more effective stimulus to chemical regulation than a fall in temperature.

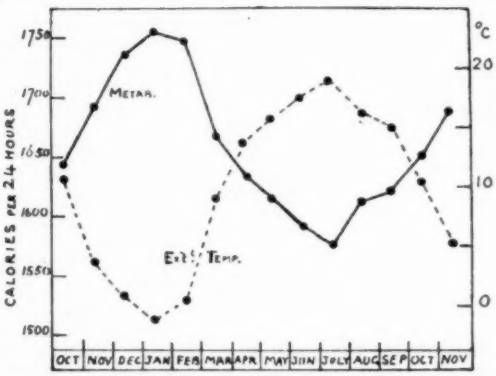
Liljestrand and Magnus (1922) made some interesting experiments which are generally taken as supporting Johansson. They immersed themselves in baths at 32° C. containing carbon dioxide super-saturated water at St. Moritz. The carbon dioxide prevented the normal constriction of the skin vessels, in fact, dilated the capillaries and abolished the uncomfortable cold feeling, although the body temperature sometimes fell 1° C. Nevertheless, they found that they did not shiver nor did their oxygen consumption increase unless the temperature of the bath were lowered to 29° C. These experiments do not seem to me to be necessarily in favour of Johansson's rigid conclusion, but to indicate that the stimulus to enhanced combustion is more readily produced by a cold skin than a drop of 1° C. in blood temperature.

How, then, are we to explain the inconsistencies between the experiments of the Swedish school and others. Gessler suggests that Johansson must have hypnotised himself and his companion, for Gessler and Hansen (1927) have shown that suggestion can inhibit contraction of the vessels to the skin and shivering, even though the body temperature falls from the consequent heat loss. I have no doubt that the real explanation for these divergent views

is that different individuals vary in the readiness with which they respond by chemical regulation and that the discrepancies are especially likely to be encountered when the experiments are of short duration. Presumably the larger the number of people experimented upon the more will this become apparent. Gessler, who has had in his clinic more experience than I can claim, emphasises that whilst the same person responds in a remarkably consistent way, he experiences great differences between individuals.

An interesting fact first brought to light by the observation of Hill and his colleagues (1922) is that patients undergoing open-air treatment not only

FIG. 11.



Mean monthly metabolism and mean monthly temperature. Gessler (1925), observations on himself.

exhibit very considerable increase in the respiratory exchange at rest over that occurring when they are kept indoors at 70° F., but that the effect persists for some time. Just as the effect of a cold bath is obvious one hour afterwards, so the effect of a month's exposure manifests itself, so I am informed by Hill and Campbell, for about a fortnight after a child is brought indoors. If this is the case, a seasonal influence upon basal metabolism should be discoverable. Benedict (1915), who denies chemical regulation without shivering, reports casually that one of his trained subjects had an 11 per cent. higher respiratory exchange in winter than in summer, but an experiment by Gessler is more illuminating. He observed his oxygen consumption at the same hour every third day throughout the year after reclining for half an hour. The results of this extended experiment are to be seen in the graph (Fig. 11) in which the mean monthly basal metabolism and the mean monthly air temperature are plotted against months of the year. His day to day variations in metabolism amounted to only 3 per cent. It will be seen from the graph that the mean oxygen consumption at rest varies inversely with the mean external temperature and is 10 per cent. higher in January than in July, notwithstanding an increase of 10 lb. in weight during the summer.

So far we have been considering more particularly the effect of a cold skin in raising combustion rate. We will now examine whether the reverse occurs and in warm climates basal metabolism is diminished. This would seem advantageous, and the earlier observations on the effect of external temperature on the respiratory exchange of man by Rubner and his assistant, Wolpert (1898), indicated that it occurred. Observation of a possible depressing effect of a warm skin upon metabolic rate is easily obscured by an increase in oxygen consumption should the body temperature rise. Plant and Wilbrand (1922) got over this difficulty in an ingenious way and found that when a man or dog was made hyperthermic and then allowed to cool down until his temperature was again normal, the man's basal metabolism was reduced 8 per cent. and the dog's about 30 per cent. They conclude that this "gegenregulation" was in operation during the hyperthermic period but was masked by the direct effect of rise in temperature on cell combustion.

Basal Metabolism in the Tropics.

If the continued absence of the stimulus of cold upon the skin leads to a depression of gaseous metabolism below that found in what we are accustomed to regard as comfortable surroundings, it should be manifest in Europeans living in tropical countries.

Eijkman (1896) was the first to measure the respiratory exchange of Europeans in the tropics (Java), and came to the conclusion that it did not differ significantly from that of persons of similar size, age and weight in Berlin. I have calculated from his figures what the metabolism should be according to the prediction tables of Du Bois and of Benedict, and they agree closely; if anything, the values observed are a little high. They were taken sitting in a chair, and I cannot find that the subjects reposed absolutely for some time before the observations were made. I anticipate that if these conditions, which are insisted upon by Du Bois and Benedict, had been those of Eijkman's experiments, his results would have been perhaps 10 per cent. lower. Young (1919) made a number of careful observations upon himself and another at the Institute for Tropical Medicine in Townsville, Queensland. The analytic part of the experiments was unexceptionable, but his results are so unexpectedly high that I can only suppose the subjects of them must have been hyperthermic, even allowing for the fact that they were taken shortly after breakfast.

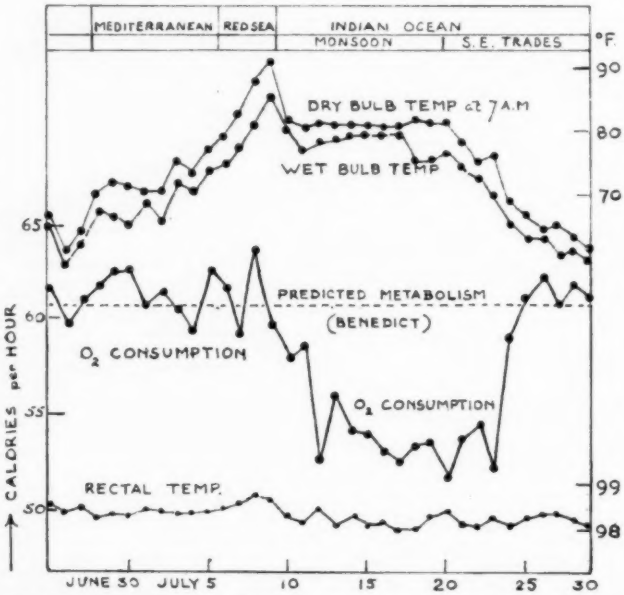
Shortly afterwards De Almeida (1921) published the results of observations on the basal metabolism of some of his medical confrères in Rio de Janeiro, from which it appeared that their metabolism was 20 per cent. less than persons of similar height, weight and age in New York. In a later series (1924) they were 16 per cent. below Du Bois' standards, but Almeida's results are still 2 per cent. too low if consideration be given to the respiratory quotients he obtained. Montoro (1921) found that Spaniards in Havana had a basal metabolism, on the average, 14 per cent. below the accepted U.S. standards. Similarly low basal metabolism rates have been recorded by Sundstroem (1926) in North Queensland, and by Hafkesbring and Borgstrom (1926) in New Orleans. Hindmarsh, who examined 76 subjects in Sydney, New South Wales, found an average diminution of 9 per cent. in men and 10 per cent. in women. Lastly, the question has been examined with extraordinary care and thoroughness by Berkhout (1929) in Eijkman's old laboratory at Weltevreden, Java. The mean of his observations on twelve Europeans represents a 10 per cent. diminution in metabolism, which is twelve times the probable error.

When the individual observations of all these different observers are scrutinised, considerable variations are to be found among them. Therein rests, I think, the cause of the divergence of opinion. Individuals react differently: some reasonably reduce their resting rate of combustion in warm climates, others do not.

In 1923 I took advantage of a voyage to Australia, during the time of year when I should experience the hottest weather in the passage through the tropics, to see whether I made any attempt to moderate my combustion rate. A voyage on a liner possesses signal advantages for such an experiment, as one can order one's life with the utmost uniformity. I took the same quantity and quality of food at the same intervals daily, and the same amount of exercise throughout the voyage. At 7 A.M. each morning, before I stirred from my bed or took food or drink, I breathed into a Douglas' bag for 15 minutes. I at once measured the volume of air breathed, removed samples into syringes over mercury, and analysed them during the morning. From the volume of air breathed and the oxygen removed from it and the

carbon dioxide it had gained, the volume of oxygen, at 0° and 760 mm. pressure, used per minute and the respiratory quotient were arrived at. From these data the number of calories produced per minute was calculated from the oxygen consumed and the respiratory quotient (Zuntz and Schumberg (1901)). The results I obtained are shown graphically in Fig. 12, in which the rate of heat formation in calories per hour is plotted for each day. The temperatures of the dry and wet bulb thermometers in °F., observed in the port-hole of my cabin with a good breeze coming through, is recorded above, and the rectal temperature on rising is plotted below. The abscissa represents the 35 days of the voyage. The temperatures recorded usually represent the minimal temperatures endured, for 7 A.M. is nearly the coolest time of the 24 hours in the tropics.

FIG. 12.



Daily observation of basal metabolism of C. J. M. during a voyage from London to Australia, June–July, 1923, and daily record of the temperatures of the dry and wet bulb thermometers at 7 A.M.

I also made daily determinations of the basal metabolism of a medical friend who was a fellow passenger. These observations, too, were made before he arose from bed. He performed his part of the investigation most excellently, but he was an unsuitable subject. I was not able to control his food supply and habits as I was my own, but I do not think that was the explanation of the fact that his consumption of oxygen varied 10–15 per cent. from day to day, and it was not obvious that warm weather had any other effect upon it than to vary it more.

You will notice that within a few days of encountering hot weather my metabolism, on awakening in the morning, began to fall, and that the minimum was not reached until five days after I began to feel the heat. In other words, it was not a quick adjustment. The same happened on encountering the trade winds, but in this case the reverse response was quicker, and accompanied by an urge to activity and a greatly increased output of urine. The maximal difference between the oxygen consumption during the hot and cool periods only amounted to 12 per cent.

We may now consider how an adjustment which persists is likely to be made. If it were an alteration in the rate of combustion in the muscles, liver and other glandular organs, brought about reflexly by stimuli coming from the nerves of temperature sensation, shortly after the particular stimulus ceased the rate might be expected to return to the normal, for the rapidity of the response to the stimulus of cold by increased heat production and its prompt cessation on removal of the cutaneous stimulation was shown by Pembrey (1893). The explanation that seems to me most probable is that we have here an example of the indirect method of varying heat production through the greater or less activity of the adrenals, and particulary the thyroid gland, the importance of which in thermoregulation is so strongly urged by Cramer and by Cannon.

The calorigenic action of adrenalin is rapid, that of thyroxin slow, but persistent. According to Aub, Bright and Uridil (1922), adrenalin produces an effect upon oxygen utilisation in minutes which takes days with thyroxin. Plummer and Boothby (1921) found the maximal effect of thyroxin occurred ten days after intravenous injection. On this account adrenalin would be useful for rapid adjustment and thyroxin for slow ones. The mode of operation of these two hormones is still unclear. Plummer and Boothby (1921), and Aub, Bright and Uridil (1922), suppose that they act as catalysts to cell oxidations, and from the researches of Adler and Lipschitz (1922), Ahlgren (1925), and Euler (1929), adrenalin certainly appears to catalyse some of the auto-oxidation processes in cells removed from the body.

Whilst agreeing with Cramer and Cannon that variation in cell combustion, due to varying activity of the adrenals and thyroid, plays a part in thermal adjustment, and believing that an adaptation of the activity of the thyroid gland is the cause of persisting increase or decrease of resting metabolism after exposure to cold or warmth, I think they incline to exaggerate the part ordinarily played by this humoral method in thermal adjustment. The experiments of Hildebrandt (1921) on rats, Grafe and Redwitz (1922) on dogs, and Isenschmid (1922) on cats show that an animal some time after thyroidectomy can regulate its temperature by varying production of heat similarly to a normal one, even when the dorsal cord is severed. True, it starts from a lower base line, but failure to compensate is not manifested until the rate of heat loss is considerable. As Isenschmid points out, the thyroid is not the only instrument at the disposal of the organism for thermal adjustment; it has a whole orchestra to play upon.

GLASGOW LOCK HOSPITAL.—The average stay of the 360 in-patients last year was 58·5 days, against 60·2 in 1928. The average age was 18·1; in the preceding year it was 18·5. New dispensary cases numbered 558, a fall of 44. In the in-patient department there were 95 children, 27 fewer than in 1928; 57 of them were infants. Dr. Madeline Archibald, the assistant medical officer, has been appointed whole-time medical officer to see patients who are diffident in going to the clinics at the dispensary, and to give regular lectures in the hospital to persons over 16 years of age, other than students and post-graduates.

CONGENITAL ARTERIOVENOUS FISTULÆ.

By Dean De Witt Lewis, M.D. Illinois,

SURGEON-IN-CHIEF TO THE JOHNS HOPKINS HOSPITAL, BALTIMORE, AND PROFESSOR OF SURGERY IN THE UNIVERSITY SCHOOL OF MEDICINE.

The arterial rankenangioma (racemose or cirsoid arterial aneurysm) has been defined as a vascular tumour in which all the arteries of a region, including their finest branches—often communicating with each other—are dilated and tortuous. Secondarily, the veins, according to most authors, are involved. Wagner believes that the formation of new vessels is characteristic of an angioma of this type, that the newly formed vessels have a decided tendency to growth, and that there is an eccentric hypertrophy of the vessels of small calibre already existing. The arterial racemose aneurysm has been differentiated from lesions known as diffuse phlebarteriectasis and diffuse phlebectasis. Diffuse phlebarteriectasis is supposed to be characterised by a progressive dilatation of an arterial bed with its capillaries and veins; while in diffuse phlebectasis only the veins are involved in the dilatation. (Fig. 1.)

Clinically, it is frequently impossible to differentiate between these vascular lesions, for a blood-vessel lesion may have the characteristics found in all just mentioned. For example, cases which I am about to report would probably be classified differently by different authors; but as they are congenital in origin, and present the signs and symptoms of a communication between the arteries and veins without the intervention of a capillary bed, I believe that they can be properly regarded as congenital arteriovenous aneurysms.

According to Osler, arteriovenous aneurysms illustrate better than any other disease how borderless are the boundaries of medicine and science. The treatment of arteriovenous aneurysm, whether congenital or traumatic, is essentially surgical, but the shunting of arterial blood directly into the veins gives rise to certain phenomena which are of interest to the physiologist, and produces signs and symptoms which attract the attention of those practising internal medicine.

Lewis and Drury state that—

"If blood leaks from the arterial system through channels other than the natural pores provided by capillaries, and leaks out at a sufficient rate, such leakage will change the arterial pressure. So far as many physical signs are concerned it seems to be a matter of indifference whether the leak occurs back into the ventricle, into the pulmonary artery through a patent ductus arteriosus, or into a vein through a direct anastomosis. The leak produces certain changes in arterial pressure which are common to all these pathological conditions. That the arterial changes should be identical in all respects in these three separate conditions, however, is scarcely to be expected, for the leakage in aortic regurgitation is confined to the diastole, while in arteriovenous anastomosis and patent ductus arteriosus it occurs throughout the whole cardiac cycle. A leakage into a large vein or into a pulmonary artery may also produce different effects by altering the pressure in these vessels rather than in the left ventricle. Despite this there will remain on the arterial side certain common manifestations of leakage, and the phenomena accompanying such leakage in one condition may illuminate similar phenomena occurring in the other."

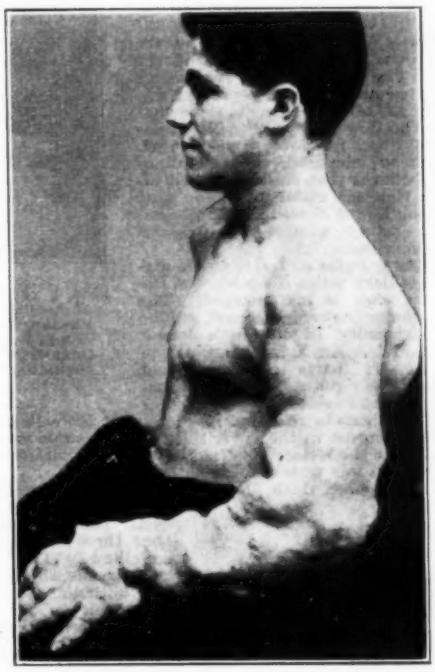
"Arteriovenous anastomoses, when free, are associated with characteristic signs of aortic reflux in the systemic arterial system—namely, low diastolic pressure, large pulse pressure, collapsing pulse, capillary pulsation, and a difference in the arm-leg systolic pressure."

The statements of Osler, and Lewis and Drury were made after a study of traumatic and experimental arteriovenous fistulæ. The lesion, which must be treated surgically, has many of the signs and symptoms of cardiac disease.

Five Recently Observed Cases.

Congenital arteriovenous fistulæ may present many of the signs of the traumatic. They offer problems, as far as therapy is concerned, which are not encountered in the traumatic variety. The congenital fistulæ also suggest a close relationship to cirsoid aneurysms, rankenangioma, and other types of hæmangiomas encountered in works dealing with surgery and in surgical practice. I should like to discuss the following cases which I have recently observed.

Fig. 1.



Case of phlebectasis reported by Reid. Large dilated veins without any of the signs or symptoms of an aneurysm.

Case 1.—W. R., male, aged 21. This patient entered the Johns Hopkins Hospital Oct. 3rd, 1929. From birth small, painless, collapsible swellings were noted in the right upper extremity of this patient. These increased in size with growth. The location of these and their general appearance may be seen in Figs. 2 and 3. When the patient was about 12 years of age a distinct bruit developed in the extremity which the patient could hear. This bruit has persisted.

Upon *examination* the pectoral region and shoulder on the right side appear larger than on the left. The veins are also much more prominent on this side. A large collapsible swelling is found upon the outer side of the arm just below the deltoid, another in front of the elbow on the inner side, and several in the forearm. A scar is found upon the anterior surface of the forearm just above the wrist on the radial side. At this point one of the large veins which seemed about to rupture was dissected out. Upon palpation a systolic thrill is felt over the suprasternal notch; in the neck as high as the angle of the jaw on the right side, and over the vessels of the arm down to the elbow near a large vein. Here distinct systolic and diastolic thrills are felt. These are felt in the forearm almost to the wrist. A distinct systolic and diastolic bruit is heard over the large purring vessel in front of the elbow. This is transmitted into the forearm. A systolic bruit is heard over the arm, along the vessels

in the neck up to the angle of the jaw on the right side, and below the manubrium.

Bradycardiac Reaction.—The heart does not seem to be increased in size, but definite vascular phenomena are noted when the brachial artery is compressed at any point down to the large vein at the bend of the elbow. When the brachial artery is occluded marked slowing of the pulse is noted almost immediately. The initial slowing is accompanied by some irregularity. For example, the pulse would be slowed by 18 or 20 beats when the artery was closed. The pulse decreased in one instance from 89 to 70 beats. This slowing could be elicited at any time. Compression of the large subcutaneous vein at the bend of the elbow in which the machinery-like thrill was felt caused slowing of the pulse, just as did occlusion of the artery. The blood flow in the extremity before the artery was compressed was 3 litres per minute. This is somewhat low. The flow rose to 3·45 litres per minute when the artery was closed. Dr. Harrop, who made these examinations, believes that there is no indication in the case under discussion that the blood flow is slowed after occlusion of the artery which communicates with the veins.

Capillary Pulse and Heart.—A distinct capillary pulse is noted, but the Duroziez sign is not marked. The heart shows no enlargement. The right extremity is one inch longer than the left. An X ray examination of the soft parts shows marked changes. The right radius is perforated by many large vessels. The architecture of this bone is indicated in Fig. 4. It is much altered. A healed fracture in the lower third of the radius is shown. According to the history this fracture occurred without much violence, and was undoubtedly pathological.

Operation (Oct. 12th, 1929).—The brachial artery was first exposed in the internal bicipital pulcus, about three inches above the elbow. The artery was considerably larger than normal. Its walls were thin. The venæ comites were large, but did not pulsate. The brachial artery was doubly ligated. The large vein at the bend of the elbow in which the machinery-like thrill was felt was next exposed. This was an enormously dilated median basilic vein. Approximately five inches of this vein were removed. It was first ligated where the deep communicating branch joins the radial, and was then dissected out proximalward to beyond the point where the superficial ulnar unites with the median basilic to form the basilic vein. The thrill ceased when the brachial artery was ligated, but the median basilic vein and the venæ comites did not collapse. Following the operation the patient complained of considerable pain in the hand. I believe this due to thrombus formation. Thrombi can be distinctly felt at the points where the pain is most severe. An especially large thrombus can be felt on the posterior surface of the forearm about the middle near the radial side.

When the patient was discharged from the hospital, Nov. 16th, 1929, a distinct bruit could be heard above the elbow and over the lower third of the humerus on the outer side. A distinct thrill could be felt there. Thrombosis had occurred in many of the vessels, even in the smaller vessels of the hand. Slowing of the pulse no longer followed closure of the brachial artery by compression. The signs associated with an arteriovenous fistula had disappeared to a considerable extent. A distinct bradycardiac reaction was noted in this aneurysm following closure of the brachial artery, but no cardiac changes.

FIG. 2.

For legend see Fig. 3.

FIG. 3.

FIGS. 2 and 3.—Photograph of Case 1 in two positions illustrating the location of the dilated veins. The most intensive systolic and diastolic thrill and machinery-like murmur were felt and heard at the bend of the elbow on the antero-internal side. Compression of the brachial artery or the large vein was followed by an almost immediate fall in the pulse-rate, the pulse slowing as much as 20 beats. The beginning of slowing was associated with some irregularity.

CASE 2*.—A. L., white, female, was admitted to the Johns Hopkins Hospital, Sept. 30th, 1925. She stated that four weeks before she had fallen and struck her arm against the corner of a table. After two hours her arm began to swell. Sharp pain was experienced. Later this became dull and throbbing. The patient also complained of a dull feeling in the little finger, and when the pain came on she felt as if she must flex her finger. The right forearm appeared larger than the left (Fig. 5), and the skin of the forearm and hand was blue. A decided swelling was found on the inner side of the upper third of the forearm which extended to the lower part of the arm. The swelling is soft and compressible and feels like a mass of worms beneath the skin. Within this mass are swellings which collapse on pressure. A distinct pulsation of the veins is noted. At the bend of the elbow on the inner side a machinery-like thrill is felt. (Fig. 6.) When the brachial artery is compressed the thrill disappears. Blood pressure taken in the right arm is 130/90—left, 100/70. There are no heart changes, and no bradycardiac reaction following compression of the artery.

Operation (Nov. 10th, 1925).—The brachial artery was exposed in the internal bicipital sulcus in the lower third of the arm, and a rubber armed artery clamp placed upon it. Two aneurysmal dilatations of the basilic veins and its radicles were then exposed. (Fig. 7.) Here the machinery-like thrill was of maximum intensity. Posterior to the internal condyle an artery, apparently a branch of the posterior ulnar recurrent which communicated with these dilatations, was found. This was divided and the veins involved dissected away. The thrill disappeared, and there has been no return. A mass of veins is still found in the skin of the arm posteriorly in the lower third. This congenital arteriovenous fistula had a small communication. There were no heart changes and no bradycardiac phenomenon following occlusion of the brachial artery.

CASE 3.—This patient, a coloured male child, was admitted to Harriet Lane Home, April 7th, 1923, when one day old. At birth a tumour was noted in middle and upper part of right arm which presented anteriorly. (Fig. 8.) This vascular tumour extended from just above the insertion of the deltoid down toward the elbow. The tumour is soft, round, with a surface somewhat ulcerated. It is the size of a small tomato, measuring 6·5 cm. in its greatest diameter. The base is

*This case has been reported—Kongenitale arteriovenöse Fisteln, Deutsch. Med. Woch., 1926, lii., 639.

covered by normal skin. The surface is apparently covered with thin epithelium. There is a stellate scar on the surface which probably resulted from a hæmorrhage which occurred shortly before the child was born. This mass is soft, almost fluctuant, and changes in size with respiration rather than with the heart beat.

In the axilla a soft mass of veins is found. The veins are easily closed by pressure. Beneath the skin, near the tumour, are radiating veins of large calibre, which are thrombosed. Small red macules and telangiectases are seen in the skin about the tumour. The apex beat of the heart is in the axillary line 3·5 cm. to the left of the nipple. A harsh systolic bruit is heard at the apex. It is of maximum intensity here. It diminishes in intensity toward the right side and is not transmitted to the back. This bruit is also heard in the vessels of the neck. As the right axilla is approached another systolic murmur is heard. This increases in intensity as the tumour is approached. Over the tumour a distinct to-and-fro machinery-like murmur is heard. This is transmitted some distance beyond the tumour. There is no radial pulse. The extremity is œdematous. X ray examination reveals a wide mediastinum. To the left of the mediastinum an abnormal pulsation can be made out. This pulsation becomes less marked and finally disappears when the brachial artery at the base of the tumour is compressed.

The child died three days after admission to the hospital. The autopsy findings were: cavernous angioma of the right arm with wide communications between arteries and veins. Congenital arteriovenous aneurysm. Dilatation of the arteries and veins proximal to the aneurysm. Patent ductus arteriosus and foramen ovale; cardiac hypertrophy, œdema of the face and neck; generalised lobular pneumonia.

FIG. 4.

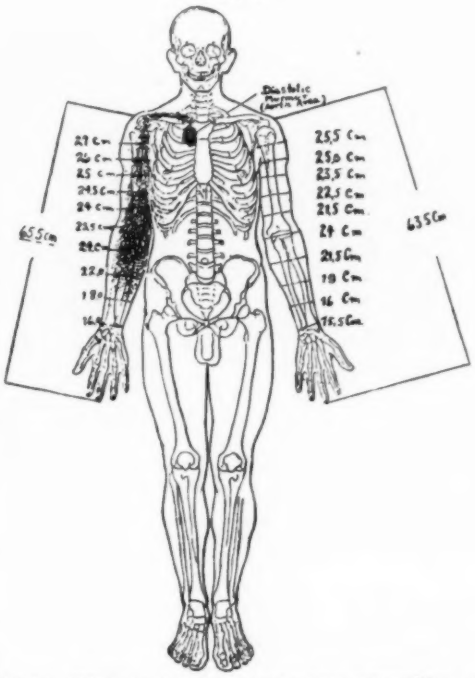
X ray of the bones of the forearm of patient mentioned in Figs. 2 and 3. The radius is perforated by many large sinuses. The site of a pathological fracture is indicated in the lower part of the radius. Anastomoses between veins and arteries in these cases render cure difficult, because it is impossible to separate the communications between the veins and arteries in the bone.

The tumour in this case (Fig. 9) suggests a definite relationship between different types of angiomas and congenital arteriovenous fistulæ.

CASE 4.—Dr. Max Ballin (Detroit) has permitted me to report the following interesting case. Since childhood the veins of the dorsal surface of the left hand had been prominent. (Fig. 10.) The middle and ring fingers were puffy and somewhat weaker than the corresponding fingers on the right side. The hand perspired profusely. Dr. Ballin, in writing to the patient's doctor, said, "P. C. is suffering from a so-called cirsoid aneurysm of the middle and ring fingers of the left hand. This is a very interesting condition to me, as I have seen the affection several times. Unfortunately this is quite a serious matter, as the aneurysmal condition usually extends into the whole hand and travels up the arm. We should try to stop the process in Mr. C.'s case by ligating off the communication between arteries and veins in the neighbourhood of the radial artery over the wrist. The communications are usually multiple and sometimes recur. Please note the increased growth in length of the affected fingers, the profuse sweating of the hand, the aneurysmal bruit over the palm and over the radial artery. I would not promise that ligation will stop the process, but it should be tried. It may be that amputation of the two affected fingers will have to be added."

Operation.—A six-inch incision was made over the radial artery from three inches above the wrist to the middle of the

FIG. 5



Indicates difference in size of the two extremities. Dots indicate the distance to which the murmur was transmitted.

palm. Large cirsoid veins surround and communicate with the radial artery. These communicating branches were isolated and ligated near the artery. The median nerve was well exposed and protected. After the tourniquet was removed, it was noted that, while the pulsations in the veins of the dorsum of the hand are less, the pulsation is marked in the veins of the hypothenar eminence and in the vessels on the ulnar side of the hand. Varicosities were found on the ulnar veins up to the middle of the forearm. These communicated with branches of the artery. The vessels were resected for a distance of about two inches. Pulsation in the large veins on the dorsum and in the palm of the hand, and in the two affected fingers ceased.

This operation did not stop the process, and when the patient was last examined a distinct bruit was heard over the dorsum of the third and fourth metacarpals, and dilated veins were present over the fingers. The final result in this case cannot be given, for the patient can no longer be traced.

CASE 5.—I am permitted to report this case through the kindness of Dr. Charles Bagley, who gave me the notes and performed the operation. R. K., female, aged 26. When 4 years old four small lumps appeared on the left auricle. No history of any injury. Patient noticed that the lesion was collapsible. She noticed that they pulsated. They were painful at times. The masses have grown larger during the past 22 years until now the whole ear is involved. (Fig. 11.) At times the pain is very severe. The pain comes on in paroxysms which seem to be associated with increase in size of the ear. The patient states that it seems as if something had burst. Pulsation of the whole ear is quite marked, and noise from the masses bothers her. Hearing in this ear has been impaired for the last two years. The ear has increased in size much more rapidly during the past two years. She says that she feels dizzy at times. There has been no headache, nausea, or vomiting. The general physical examination is essentially negative, except that the patient is pale and obviously undernourished. The left ear is as large as a fist. The swelling is quite symmetrical, but more prominent posteriorly than anteriorly. The ear is purplish in colour,

tense, and pulsates with each heart beat. The ear is irregular over the external surface and large distended veins can be seen. In front of the ear, just over the temporal artery, is a small pulsating swelling. Another mass is found over the back of the ear which extends over the mastoid process. A bruit can be heard over the ear. When both carotids are compressed the bruit disappears. It persists when either one alone is compressed. Two small, distended, pulsating

FIG. 6.

Area circumscribed by line indicates point at which systolic and diastolic thrill was felt, and systolic and diastolic bruit heard, in Case 2. No bradycardiac reaction followed compression of brachial artery or occlusion of openings.

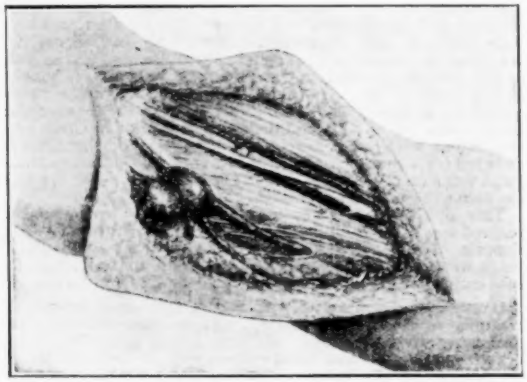
veins are found at the tip of the chin. These communicate by a small vein extending along the angle of the jaw back to the pulsating mass in the left ear.

Operation (Nov. 16th, 1929).—The veins on the front of the ear were removed. Veins perforating the cartilage of the ear formed a communication between those on the front and back.

When discharged Dec. 9th, some improvement in the condition of the ear was noted. Pulsation was less marked; the ear was smaller. The bruit and pulsation were, however, still present, even if less marked.

CASE 6.—This patient, Miss Z. W., aged 44, was admitted to the surgical service of the Johns Hopkins Hospital,

FIG. 7.



Dilatation of the subcutaneous veins at the elbow-joint is shown in this figure. The communication between the arteries and veins in this case was by a single branch posterior to the internal condyle. This vessel was apparently a branch of the posterior ulnar recurrent artery. This communication was divided and the brachial artery ligated. The signs and symptoms of an aneurysm have disappeared. A mass of subcutaneous veins (hæmangioma) still remain posterior to the lower third of the humerus in the subcutaneous tissue.

Jan. 23rd, 1930, complaining of pain in the right heel of about three years' duration. The family and past histories have no bearing on the case. The patient had noted that the right foot and lower part of the right leg had been larger than the left foot and leg, but had not paid much attention to this. The first definite evidences of discomfort in the foot apparently developed after the patient had been standing some time watching a parade. The symptoms noted then were intermittent attacks of pain, numbness and swelling across the under surface of the right heel. At first these symptoms could be controlled by strapping the ankle. Gradually the pain increased, and the patient experienced a sensation as if she were stepping upon a bee whenever the heel was placed upon the floor. One year after the onset of symptoms a diagnosis of an arteriovenous aneurysm was made, and electrolysis employed with temporary benefit.

Operation (May, 1928).—Brisk hæmorrhage was encountered at this operation, but it is difficult to determine the nature of the operation from the history given by the patient. During March, 1929, the symptoms recurred. Electrolysis was again attempted with some improvement, but the symptoms recurred, and in October, 1929, a more extensive operative procedure was resorted to. A number of vessels were ligated and excised. The scar of this incision is upon the outer side of the foot, extending distalward from the external malleolus and anteriorly and posteriorly to it. The swelling beneath the right heel has increased considerably since this operation, and the patient has been unable to place her heel upon the

FIG. 8.

Congenital tumour in a child. All signs and symptoms of an aneurysm occurred in this lesion. The child also had a congenital heart lesion. Death occurred soon after birth. The history of this patient is given under Case 3.

floor, and pains are frequently felt through the ankle and heel. The pulse-rate varies from 80 to 100. The blood pressure is 158 over 84. The heart is negative. No bradycardiac reaction can be elicited. Some pitting of the right ankle is noted. The right foot and lower part of the right leg are distinctly larger than the left foot and leg, and several small angiomas may be seen. A diffuse swelling, 5 cm. in diameter, is found beneath the right heel. (Fig. 12.) Although tense, this can be collapsed by pressure. The whole mass seems to be raised by systole. A systolic and diastolic thrill can be felt, and a systolic and diastolic bruit heard over this mass. The bruit has a rather sharp piping or whistling character. A small angioma is found on the back near the scapula on the right side.

This case presents some interesting features. Evidently changes in the leg and foot were noted from birth. Pain and discomfort in the foot developed but three years ago. One might be justified in concluding from the symptoms that an angioma was present from birth, and that the arterial communication was established but three years ago. This followed standing for some time watching a parade. The case also suggests the intimate relation which may exist between angiomas and congenital arteriovenous fistulæ. The bruits can no longer be heard when the vessels behind and about the external malleolus are occluded.

In this group of cases are found most of the clinical phenomena and peculiarities of congenital arterio-

venous aneurysm. In the first case the bradycardiac reaction which follows occlusion of the artery, whose branches communicate directly with the veins, or the closure of the communications between arteries and veins, was striking. In the second case no bradycardiac reaction was noted. In both the second, third, and sixth cases the relationship between hæmangiomas and congenital arteriovenous aneurysms is suggested. The destructive nature of some lesions of this type is illustrated by the fourth case. The fifth case presents the clinical picture of this type of lesion occurring about the head and face, to which the term cirsoid aneurysm is frequently applied.

The Bradycardiac Reaction.

Not infrequently Branham is given the credit of having first observed the marked slowing of the heart which follows occlusion of the principal artery which supplies a congenital arteriovenous aneurysm or the communicating openings. Nocoladoni, in an article entitled "Phlebarteriectasie der rechten oberen Extremität," published in 1875, mentions very definitely the slowing of the pulse which follows closure of the principal artery, branches of which communicate directly with the veins without intervention of capillaries. This phenomenon is also described by Israel in an article published in 1877, entitled "Angiectasie in Stromgebiete der arteria Tibialis antica." He states that digital occlusion of the femoral artery caused the pulse to drop from 108 to 66 beats per minute, with considerable increase in arterial pressure proximal to the point of occlusion. The heart's action also became somewhat irregular. When the extremity was raised, so that the amount of blood flowing through the aneurysm was reduced, the pulse dropped from 92 to 54.

In both of these communications the bradycardiac reaction is definitely mentioned. Branham's description of this phenomenon was made in 1890. Nicoladoni's description preceded this by almost fifteen years. Various explanations have been given of this phenomenon. The reaction depends upon the amount of blood that is shunted through the aneurysm. If the communication is small the phenomenon will not be observed. If large or many, the phenomenon will be observed, and the congenital type of arteriovenous aneurysm does not differ in this respect from the traumatic. Lewis and Drury came to the following conclusions concerning this phenomenon in their study of the traumatic variety. Their conclusions are expressed as follows:

> "Dealing with the phenomenon observed—namely, conspicuous fall in rate on closing the anastomosis. This fall is vagal in origin, for it is abolished by atropinisation. We are justified in concluding that it is wholly vagal, for at the height of the atropine reaction in the case tested the pulse-rate was altered by but two beats per minute on closing the anastomosis. This slight difference is sufficient to be explained by incomplate paralysis of the vagus by the drug."

Naun has recently made a similar observation. The rise of rate in opening the anastomosis is to be ascribed to a fall of vagal tone. But compression of the artery leading to the aneurysm was ascertained in two of our patients to produce no fall of venous pressure and decompression was ascertained to produce no rise of venous pressure. The changes of heart-rate on compressing and decompressing the artery cannot be ascribed therefore to altered venous filling, but must be attributed mainly to altered arterial pressure. With the last they are very closely associated. When the leak is closed, the lowest pulse-rate is reached within a few heart cycles of the

FIG. 10.

The history of this patient is given under Case 4. Dilatation of vessels on the back of the hand is marked. Some of the signs of an aneurysm persisted after operation. The patient was finally lost track of, so that final result cannot be given. This case is published through the kindness of Dr. Max Ballin, of Detroit.

FIG. 9.

X ray of injected specimen indicating the relation of the vessels found in the lesion represented in Fig. 8. This case suggests the relation which may exist between the different types of angioma and congenital arteriovenous aneurysm. Rich communication between arteries and veins is shown.

act of compression. It is at this phase that the systolic arterial pressures rise to their highest. The lowest heart-rate is not long maintained, neither is the highest arterial pressure, both are fleeting; but as this systolic pressure also rises a little or remains unchanged, the arterial pressure change may be viewed as a rise of mean pressure. That a rise of mean arterial pressure retards the heart-beat was first shown by Marey; the effect is generally acknowledged and is ascribed to the vagus.

Lewis and Drury, in summing up, state that:

"in arteriovenous aneurysm the pulse-rate is higher than normal, and this rapid heart action is due to changed vagal tone, controlled through the medium of mean arterial pressure. These observations provide us with a simple explanation of the increased heart-rate which is generally recognised to occur in aortic regurgitation; for the same factor, low mean arterial pressure comes into play in these cases also. When an arteriovenous aneurysm has become established the initial rapidity of the heart's action appears to be in a measure checked, for the rates on closing the leak are lower than normal; probably the same is true in aortic disease."

FIG. 11.

Arteriovenous aneurysm of left ear. Considerable improvement has followed extirpation of veins on the anterior surface of the ear. History given under Case 5. Reported through the courtesy of Dr. Charles Bagley, of Baltimore.

Cardiac Enlargement.

Cardiac enlargement was also noted in aneurysms of the congenital type by Nicoladoni and Israel. In Israel's case the patient was a child, 9 years of age. It is stated that following the amputation for gangrene, following operative interference on the femoral artery, the femoral arteries have become alike, that the right external iliac which was before the operation tortuous, cirsoid and much dilated, differs from the normal artery on the left side only by increased pressure, and that the dilated heart has become smaller in all diameters.

It will be seen, therefore, that cardiac enlargement may occur in the clinical picture of this type of aneurysm. Cases have been reported by Nicoladoni, Israel, Steinheil, Emanuel, Simmons, Perthes, Pusch, and others. The objection might be raised that in some of these cases the cardiac changes were secondary to high blood pressure, coronary sclerosis, or emphysema; but enough cases have been observed in which the heart has returned to normal after the operations to justify the conclusion that the cardiac changes are dependent upon a disturbed vascular mechanism. Leriche extirpated a traumatic arteriovenous aneurysm in a patient with enlargement of the heart and signs of decompensation. After the operation the heart returned to normal and the signs of decompensation disappeared. A similar case has been observed by Hoover and Beans. The case observed by Israel has already been cited.

According to Lewis and Drury:—

"The cardiac change may be due to a diminished blood flow through the nutrient vessels of the heart. If we take the supply to our limbs as our index, then the flow through the coronary vessels may be diminished by an arteriovenous aneurysm to even one-half of its normal amount. Moreover, Markewalder and Starling have brought evidence to show that the flow in the coronary vessels is peculiarly dependent upon aortic pressures; that being the case, the fall of mean arterial pressure is of even greater consequence to the metabolism of the heart than it is to the metabolism of the body generally. A dilatation of the heart consecutive to the formation of a free arteriovenous anastomosis appears to us a natural sequence."

The cardiac changes may be the direct result of the circulatory disturbances associated with the congenital arteriovenous aneurysm. In some there are no cardiac changes. In these not enough blood is shunted directly into the veins to produce these changes, the anastomosis or anastomoses being relatively small. It has never been determined how much blood must be shunted directly into the veins to cause this change. Congenital arteriovenous aneurysms occur in the young, and the heart may be able in these cases to take care of the increased work thrown upon it. In none of the cases observed by me has cardiac hypertrophy or decompensation been a marked feature of the clinical picture. This statement also applies to the cases observed by Dandy of congenital arteriovenous aneurysms of the cerebral vessels.

There is abundant evidence to prove that cardiac hypertrophy and decompensation may follow traumatic arteriovenous aneurysm. Cazanian noted that a hypertrophied heart diminished in size following successful operation. That dilatation is the main element in the enlargement is clearly evidenced by the rapidity with which the size decreases when its cause is removed; thus Naun and his collaborators noticed the change to occur within a few weeks of the operation in two cases. Similar rapid return of the heart to normal has been observed in a number of cases.

Development of the Aneurysm.

In many of the cases reported the signs and symptoms of an arteriovenous aneurysm were not present at birth. In Cases 1 and 6 of the series now reported the signs of an aneurysm, according to the statement of the patient, did not appear until the patients were 13 and 41 years of age respectively. There is a possibility in all of the cases that the signs were present but not noted. In other cases the signs and symptoms have developed, according to the patient's statement, after a strain or injury by

blunt force. In none of the cases, however, has there been a penetrating wound; therefore, the possibility of the traumatic variety of arteriovenous aneurysm can be excluded.

Rienhoff states that:—

"congenital arteriovenous fistula is a very rare condition, but a definite clinical syndrome which has been confused in the past with other congenital anomalies of the blood vascular system, such as aneurysm by anastomosis, cirsoid aneurysm, nevus maternus, pulsating nevus and venous aneurysm. In consideration of the mode of development of the blood vascular system, and in view of the fact that in one experiment an arteriovenous fistula was observed in formation, we feel that congenital arteriovenous fistula occurs as the result of the persistence of vessels or communications of the primary anlage, which, failing to develop into the normal definitive vascular tree, results in the formation of anastomotic channels either directly or indirectly between otherwise normally developed arterial and venous trunks."

Apparently the abnormal communications may be established after birth, either spontaneously or as the result of some injury in which the vessel walls have not been penetrated. This statement is made after eliciting a careful history of patients under observation and studying cases which have been reported. If there is a direct end-to-end communication between the vessels, the lesion may resemble a tumour in its rapid enlargement and destructive character. The enlargement will be considerably less rapid when the arteries and veins are connected by small lateral communications. The communication between the arteries and veins without the intervention of a capillary bed gives the distinct characteristics of lesions of this type, and differentiates them from other vascular tumours clinically. Many of the vascular tumours are potentially congenital arteriovenous aneurysms, however, for at any time the direct communication between the arteries and veins may be established spontaneously, or as the result of an injury in which the skin is not penetrated.

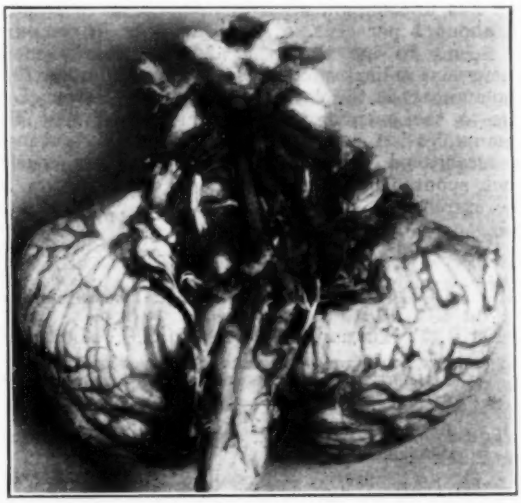
Reid believes that cirsoid and arteriovenous aneurysms are alike in many other respects. Ætiologically, trauma and congenital anomalies are

FIG. 12.

Swelling beneath the heel indicates site of the lesion. This mass has a heaving pulsation, which is transmitted from some distance below. A systolic and diastolic thrill can be felt and a machinery-like murmur heard over the mass. No bradycardiac reaction can be elicited. There are no cardiac changes. Dilated veins may be seen in the skin. History given under Case 6.

productive of both conditions. Trauma is by far the most frequent cause of arteriovenous aneurysms; it is probably the most frequent cause of cirsoid aneurysms. Many of them have followed a blow on the head, and most of the cirsoid aneurysms occur in this region. In this very vascular region, where the bone is near the surface, blows might easily establish an anteriovenous communication, taking the form of a cirsoid aneurysm. Indeed many of the so-called congenital cirsoids of the head may have had their origin in the pressure exerted on the skull at birth. Clinically, both conditions lead to enormous dilatation and pulsation of the involved veins and proximal arteries. After a study of his own and reported cases, Reid says that he cannot escape the conclusion that there is no difference between cirsoid aneurysms and arteriovenous aneurysms, except that the term cirsoid aneurysm has been applied to that condition which results from abnormal venous communications which occur in the more peripheral and smaller vessels.

FIG. 13.



Arteriovenous aneurysm of base of brain. Many large tortuous veins are seen (Dandy).

Granting that the above contentions are true, it must be assumed in most cases that there has been an anomaly in the blood vascular anlage which permits of the development of this peculiar lesion when the essential causative factors, such as blunt force or a spontaneous communication between the arteries and veins are operative. That a communication may be established relatively late between anomalous arteries and veins would seem to be well shown in arteriovenous aneurysms of the brain. In 44 per cent. of the cases in Dandy's report, the first symptom did not appear until after the age of 30, and in 30 per cent. the symptoms began after the fortieth year. The latest appearance was at the age of 48. If we may assume that the symptoms were associated with the aneurysmal changes in vessels in which an anomaly was present, the communication between the arteries and veins did not develop until late.

According to Dandy, two types of arteriovenous aneurysms occur in the brain. In one an anomalous vessel of congenital origin established a direct end-to-end communication between an artery and vein;

in the other a net-work of vessels—so-called angioma—is interposed between an artery and one or several veins. Both types are characterised by large, full and tortuous veins on the surface of the brain. (Fig. 13.) A thrill can usually be felt, and red arterial blood can be seen in the dark venous blood. Congenital anomalies are usually found in the veins on the surface of the brain. Arteriovenous aneurysms of the brain are not uncommon, occurring, according to Dandy, in about 1 per cent. of a series of brain tumours. It seems to me that this class of arteriovenous aneurysms indicates more clearly than any other that the anomaly in the vascular anlage, which later gives rise to the aneurysm, is congenital, and that the communication between the arteries and veins may be established later, and in the brain spontaneously. Such spontaneous communications also develop in the extremities.

(To be concluded.)

COG-WHEEL BREATHING.

By G. T. Hebert, M.D. Oxf., M.R.C.P. Lond.,

PHYSICIAN IN CHARGE OF THE TUBERCULOSIS DEPARTMENT, ST. THOMAS'S HOSPITAL, LONDON.

The following paragraph appears in a well-known handbook [1]:—

Jerky, Interrupted, or Cog-wheel Inspiration.—Here the sound is not continuous, but occurs in waves or sharp jerks. This indicates irregular expansion of the alveoli, due to unequal elasticity in various parts of the lobules, and is therefore not infrequently present in early tuberculosis. It may result, however, simply from nervousness, and to carry any weight as a physical sign it must be well marked even on deep inspiration. Even then, however, it may mean little or nothing, and should only take a very secondary place.

Again, according to Powell and Hartley,[2] cog-wheel breathing may be due to irregular action of the respiratory muscles, to hysteria, or to textural diseases of the lungs, or may be produced by cardiac pulsation; and in their table of physical signs [3] its significance is given as "irregular expansion of lung from partial consolidation around small bronchi; but often of purely nervous origin through irregular contraction of muscles." American authors [4 5] express similar views. In other words, the general opinion seems to be that cog-wheel breathing has sometimes a pathological, sometimes a functional, and sometimes a physiological origin; that at times it indicates early tuberculosis, and at others has little or no significance.

Study of 1000 Cases.

In order to attempt to clarify the position and to assess the value of cog-wheel breathing as a physical sign, a study of 1000 cases was undertaken, consisting of 428 adult males, 409 adult females, and 163 children under 16. In 292 of these pulmonary tuberculosis was diagnosed, while in the large majority of the remaining 708 no lung lesion was apparent.

The inquiry emphasised the fact that cog-wheel breathing, as defined above, is of two kinds. In one the interruptions are irregular; in the other they are regular or, to be more exact, they are synchronised with the beat of the heart. Breathing of the first type is uncommon, and is rarely, if ever, heard as well-marked waves or sharp jerks. In none of the 1000 cases could it be ascribed to a pulmonary or pleural lesion, and, on the few occasions on which it was heard, it was noticeable only when the patient was breathing forcibly. The writer holds that for testing the quality of breath sounds forcible respiration should not be used, and, if this rule is adhered to, irregularly interrupted breathing is so rarely heard that it ceases to be of any importance for clinical purposes. Breathing of the second type, on the other hand, is by no means uncommon and can at times be a very striking feature. The description and figures given below refer only to this second, or regular, type, which would appear to be merely a physiological phenomenon, and for which "air waves" is the most suitable term.

DESCRIPTION OF AIR-WAVES.

Air-waves are heard during inspiration, but only rarely during expiration. Though synchronised with the beat of the heart, and systolic in time, they are breath sounds not heart sounds, for they cease when the breath is held (or during expiration) and the heart sounds may then be audible in their place. Their number during an inspiration varies with the pulse- and respiration-rates, but usually at least two or three waves can be heard. Their intensity varies in different patients from a series of sharp hissing sounds with short intervening pauses to barely perceptible rhythmical increases in the inspiratory sound, but is constant for any particular patient. Certain factors, particularly the force of the cardiac impulse, may affect their intensity but under similar conditions they remain the same from day to day. They are heard best near the angle of the left scapula or in the axilla, and sometimes only over a small area and after careful search. If present here they may in some cases be heard round the border of the heart in front, particularly just outside the apex, or over the greater part of the left lung, or sometimes on the right side as well. They are less obvious during deep inspiration, but appear to be more obvious in cases of fibrosis.

FREQUENCY.

In the 1000 cases investigated, air-waves were not considered to be present unless at least at one place their cardiac timing could be recognised. Under the ordinary conditions of examination, and without any attempt to reinforce them, they were found in 127 (30 per cent.) of the adult males, in 217 (53 per cent.) of the adult females, and in 31 (19 per cent.) of the children under 16. In each successive 100 cases examined there was rarely more than a 10 per cent. difference from these figures.

RELATION TO TUBERCULOSIS.

The following table shows that the percentages of cases with air-waves were decidedly higher in the tuberculous than in the non-tuberculous:—

—	Non-tuberculous cases.			Tuberculous cases.		
	A.m.	A.f.	C.	A.m.	A.f.	C.
With air-waves ..	69	123	27	58	92	4
Without air-waves	211	150	128	90	136	4
Percentage with air-waves	25	46	17	39	68	50

A.m. = Adult males. A.f. = Adult females. C. = Children.

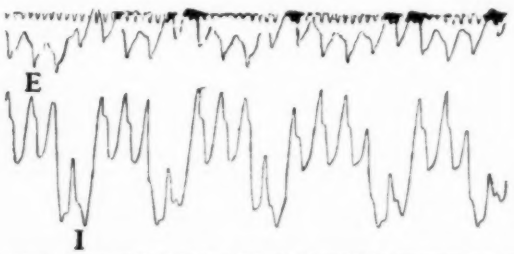
The difference is probably of no significance, for the

[1] Hutchison, R., and Hunter, D.: Clinical Methods, London, 1929, p. 302.
[2] Powell, R. D., and Hartley, P. H.-S.: Diseases of the Lungs, 6th edition, London, 1921, p. 52.
[3] Ibid., p. 40.
[4] Fishberg, M.: Pulmonary Tuberculosis, Philadelphia, 1922, p. 341.
[5] Norris, G. W., and Landis, H. R. M.: Diseases of the Chest, 4th edition, Philadelphia, 1929, p. 129.

situation of the air-waves bore no relation to the site or character of the lesion, and probably is to be accounted for by a generally more forcible cardiac action in the tuberculous. The same factor, but caused in this case by nervousness, no doubt accounts for a percentage of air-waves of 64 in non-tuberculous women between the ages of 16 and 25, as compared with that of 37 for non-tuberculous women over 25.

CAUSE.

The situation and the timing of air-waves make it probable that the heart, and particularly the left ventricle, is intimately concerned in their production. I would suggest that the contraction of the heart causes a compensatory expansion of the adjacent part of the lung so that it expands in a series of jerks, with a corresponding effect on the inspiratory current of air and the breath sounds. Before such a theory can be accepted, it must be proved (1) that an increase of the intrathoracic negative pressure occurs with each cardiac systole, (2) that the current of air entering the lungs undergoes periodic acceleration,



Tracing from a patient with a left-sided artificial pneumothorax. The upper record is from the cardiac impulse on the chest wall, the lower from the pneumothorax. In the latter, expiration is marked E and inspiration I. The highest expiratory and lowest inspiratory pressures were 13 and 5 cm. of water, respectively. The tracing, to be read from left to right, shows negative pressure waves in the pneumothorax during inspiration and expiration, synchronous with the beat of the heart.

(3) that forcible action of the heart increases air-waves, and (4) that expiration is affected similarly to inspiration.

1. An investigation of changes of pressure in the thorax was made in a series of patients undergoing artificial pneumothorax treatment. Using the metal manometer of the Heaf's apparatus, which is more sensitive than the water manometer of the Lillingston and Pearson model, it was found that in all cases a reduction of pressure occurred in the pneumothorax with each cardiac systole. These reductions were approximately the same during expiration and inspiration, they were slight in the right-sided cases, they were larger when the collapse of the lung was complete and when the mediastinum was rigid, and they amounted to a negative pressure of 3 or 4 cm. of water in some left-sided cases in which well-marked air-waves had been heard before the pneumothorax was induced. Some records were made with a polygraph.

2. Pressure fluctuations, which presumably would result in alterations of velocity, were demonstrated in the inspiratory and expiratory currents of air by attaching the manometer to a lead from the tubing of a Douglas mask; and by replacing the manometer by a polygraph, the synchronisation of the respiratory waves with the apex thrust was shown. In many cases waves can be heard in the trachea if the patient takes a long slow breath.

3. In several patients the effect of exercise on air-waves was tested. It invariably increased their audibility or, in some cases, rendered them audible when they could not be heard under normal conditions. A few cases of valvular disease of the heart with hypertrophy were examined, but no increased tendency to air-waves was noted.

4. The tests just mentioned in paragraphs (1) and (2) show that pressure fluctuations occur in expiration as well as in inspiration, though air-waves are not often heard in the former.

Finally, the question arises: If air-waves are a physiological phenomenon, why cannot they be heard in every individual? The investigation showed that air-waves differ in intensity in different cases. In some they are well marked, in others barely recognisable, and in others inaudible even after exercise. Yet pressure fluctuations were recognisable in the pneumothorax of all of the cases tested and it is reasonable to suppose that air-waves, inspiratory and expiratory, could be heard in all individuals if the auscultatory test were sufficiently sensitive.

DIFFERENTIAL DIAGNOSIS.

Certain sounds with a cardio-respiratory timing can occasionally be heard, the commonest of which are exocardial murmurs, pleuro-pericardial friction, and certain vascular murmurs. Hutchison and Hunter [6] describe an exocardial murmur as follows:—

> A soft systolic murmur of exocardiac origin is occasionally audible near the apex of the heart in cases of pulmonary tuberculosis; it is often propagated towards the axilla just as a mitral systolic murmur would be, but may be distinguished by its ceasing to be heard over the heart itself where uncovered by lung, and by disappearing or altering markedly in character when the patient holds his breath. Such cardio-respiratory murmurs must not be mistaken for the true endocardial ones.

The possible explanation of such murmurs on the basis of air-waves should always be borne in mind. At least four of the 1000 cases investigated had been diagnosed as cases of heart disease on account of a systolic murmur heard to the left of the apex of the heart during inspiration. As none of the four had symptoms of heart disease and all had well-marked air-waves over the left lower lobe posteriorly, it is almost certain that the so-called murmur was also a respiratory sound. Similarly, some cases of so-called pleuro-pericardial friction are merely instances of air-waves, and are respiratory sounds not friction sounds. In two of the 1000 cases a definite pleural friction sound at a distance from the heart had a cardiac timing during inspiration, while air-waves could be heard over adjacent parts of the chest wall. On the other hand, murmurs may be heard during inspiration over the upper part of the chest in front which are certainly not air-waves. The commonest is that heard just below part of the clavicle on either side. It is a vascular murmur from the subclavian artery, heard towards the end of inspiration when the vessel has descended with the apex of the lung and has come within the range of the stethoscope.

Conclusions.

1. Cog-wheel breathing is of two kinds. In one the interruptions are irregular, and are due probably to irregular action of the respiratory muscles. In the other they are regular, have a cardiac timing, and are best termed air-waves.

2. Air-waves were found in 30 per cent. of adult males, in 53 per cent. of adult females, and in 19 per cent. of children under 16 in 1000 cases investigated.

3. Air-waves are not caused by tuberculosis of the underlying lung tissue, but are a physiological phenomenon.

4. Their situation and the demonstration of pressure fluctuations, synchronous with cardiac systole, in the pneumothorax cavity of some patients and in the inspiratory and expiratory currents of air of others, suggest that they are caused by an expansion of the lung compensatory to the contraction of the heart.

5. Certain cases of so-called exocardial murmurs and of pleuro-pericardial friction are probably merely instances of air-waves.

[6] Op. cit., p. 177.

RADIUM TREATMENT OF CANCER OF THE TONGUE.*

By Stanford Cade, F.R.C.S. Eng.,
assistant surgeon, westminster hospital.

Radium treatment of cancer of the tongue has made rapid strides in the past few years, following the results obtained by Regaud, who introduced the method of needling now in most general use. A period of exaggerated enthusiasm followed, and, unless a period of unjustifiable pessimism is to come, it is essential from time to time to review the position of this relatively new method.

Selection of Cases.

The time for comparing and contrasting radium with surgery has passed, so far as the immediate results are concerned, and the possibilities of radium are now universally recognised; but a comparison of end-results is more difficult to assess accurately because operability is of far greater importance in excisional treatment than it is in radiotherapy. Radium as a method of treatment is applicable in cases totally unsuitable for excision and, in the study of the list of cases to follow, no attempt is made to separate the operable from the inoperable group; stress is, however, laid upon the glandular condition. All cases were treated with the exception of those actually not expected to survive more than a few weeks. The chief object in view was to alleviate the patient's condition, even if nothing more than palliation was anticipated. The selection of cases makes a vast difference in the percentage of final results, but we were less concerned with the brilliancy of eventual statistical tables than with the attempt to treat all cancerous patients seeking advice; and in this way from time to time an entirely unexpected result was obtained, which was nothing short of a miracle. This was perhaps a factor mercifully provided by chance in an otherwise dismal procession of patients, the majority of whom were rejects from other institutions and were well beyond the range of even the most courageous of surgeons.

All the cases were treated by implantation of radium needles into and around the tumour, seeds being used exceptionally when local conditions demanded it. The needles used contained 0·6 mg. and 1·3 mg. of radium, and were fully screened by 0·5 mm. and 0·6 mm. of platinum respectively. The period of treatment was seven days. The amount of radium used depended upon the extent of the disease. Treatment of the primary lesion was nearly always followed by treatment of the lymphatic area in the neck. Only in the first two years was this occasionally omitted, generally in cases where nothing abnormal was palpable. This policy proved disastrous and was soon abandoned in favour of systematic treatment of the lymphatic areas in all cases.

Analysis of Results.

The statistical tables submitted are based upon a total of all my own cases treated at Westminster Hospital, in private and elsewhere, and upon the cases treated by my colleagues at Westminster Hospital. They cover the period of five years from April, 1925, to April, 1930. There is no selection of cases; the few not submitted to treatment are not included in the tables. Those that could not be traced are considered as having died three months after their last visit to the hospital. The remainder of the cases have been traced and seen, or their doctors communicated with. A suspicious induration is considered as a local recurrence, unless excised and proved to be non-malignant on histological section.

Oral Cancer.—The total number of cases of oral cancer treated is 253; distributed as shown in Table I.

Table I.—*Total Cases of Oral Cancer.*

Tongue	169	Palate	28
Cheek (buccal mucosa)	23	Lip	21
Tonsil	12		

Lingual Cancer.—The total number of cases of lingual cancer is 169, distributed as in Table II.

Table II.—*April, 1925, to April, 1930: Five Years.*

Carcinoma of tongue.	Total.	Disappearance of primary growth.	Local recurrence.
Anterior	20	15	7
Antero-lateral	79	65	21
Postero-lateral	14	9	2
Inferior	33	25	9
Posterior	23	12	4
	169	126	43

This table shows that disappearance of the primary lesion was obtained in 126 cases—that is, 74 per cent. The number of local recurrences, as distinct from primary failures, is 43 (25 per cent.); this group includes cases where the lesion reappeared, although by subsequent treatment the disease may have been completely eradicated. The percentage of cases requiring a second treatment was definitely greater in the group treated by radon seeds than in those treated by needles. In some cases local recurrences were obviously due to under-dosage and, as experience increased, this group of cases became smaller. The local recurrences must be carefully distinguished from ulceration at the site previously occupied by the primary growth which may be due to sepsis, excessive irradiation, and a delayed radium reaction specially in areas involving the mucosa covering the gum, where an underlying necrosis of the bone may not become evident till a few months later. The percentage of local recurrences can be minimised by removing with the diathermy needle all suspicious indurations, residual nodules of thickened tissue, although these may only be due to fibrosis. The local condition of the area previously occupied by the neoplasm must be soft, resilient, and covered with intact mucous membrane. With adequate screenage, suitable dosage, uniform distribution of the needles, strict aseptic precautions, and preliminary oral hygiene, including the removal of teeth, this can be achieved in the majority of cases.

Survival-rate.

Table III. shows the survival-rate in the cases treated in each year. It shows only two cases alive out of a total of 18 cases treated in 1925. But this list must be studied in conjunction with Table IV.,

Table III.—*Survival-rate.*

Year.	Total cases.	Alive to-day and percentage.	Years of survival.
1925	18	2 (11)	5
1926	16	3 (18·7)	4
1927	23	6 (26·5)	3
1928	33	16 (48·4)	2
1929	47	30 (63·8)	1
1930	32	16 (50)	Less than one.
Total..	169	73 (47·9)	—

* Read at the Section of Surgery of the British Medical Association's meeting at Winnipeg, Canada, reported on p. 638

which shows that of the 18 cases 13 had palpable glands, and in seven of these the glands were surgically irremovable; this leaves five cases with no palpable glands, of which two are alive at the end of five years. It has already been stated that in the early days the treatment of the neck received only scanty attention, so that, although these five cases were early, some of them had no treatment to the lymphatic area till it was too late and eventually died from metastasis.

Table IV. shows the number of cases treated in each year, those with lymphatic involvement and those where the glands were inoperable. The percentage of survival for less than one year in 1930 is 50 per cent.—that is, less than the one-year survival for 1929, and can be explained by a marked increase in hopeless cases treated as more accommodation for patients was provided.

TABLE IV.—*Glandular Involvement and Rate of Survival.*

Year.	Total cases.	Glands		Survival in years.			
		Involved.	Inoperable.	Five and four.	Three.	Two.	One or less.
1925	18	13	7	2	3	1	2
1926	16	14	9	3	4	2	7
1927	23	22	11	—	6	5	12
1928	33	24	15	—	—	16	17
1929	47	33	23	—	—	—	30
1930	32	24	18	—	—	—	16
Total	169	130	83	5	13	24	84

Some Points of Importance.

The experience gained by the treatment and the study of after-results of these 253 cases has led to a better understanding of the disease, to some improvements in the methods of treatment, and to a more thorough attack on the glandular area. The lessons learned are summarised below.

TREATMENT OF PRIMARY LESION.

(*a*) Needles are preferred to seeds as more accurate distribution is possible and there is less likelihood of leaving non-irradiated areas and so possible sites for future recurrences.

(*b*) The impression that results are more permanent with radium salt than with emanation is based upon actual cases, and is possibly due to the uniform intensity being maintained through the whole period of treatment with the former.

(*c*) Screenage by 0·6 mm. of platinum is preferred, as this allows the treatment to be continued for seven to ten days without marked risk of necrosis.

(*d*) Re-needling of the tongue at the end of the first week is practised in extensive lesions and is preferred to larger dosage left in for seven days only.

(*e*) Cases of posterior carcinoma can be needled by open operation through a pharyngotomy with great accuracy and good result. Peroral needling is less accurate and should be reserved for the more sensitive type of tumour (the transitional-celled carcinoma of Quick or lymphocarcinoma of Regaud).

PROSTHETIC APPLIANCES.

(*a*) Lead protection of the roof of the mouth is practised in every case where the amount of radium in the tongue exceeds 6 mg. (10 needles of 0·6 mg. or its equivalent). The protection is not always necessary, but is a safeguard against radium burns of the palate which have occurred in non-protected cases.

(*b*) Lead protection of the floor of the mouth is not used as a routine, but only in cases where the disease is entirely localised to the tongue and does not involve the floor of the mouth.

(*c*) Plates made of stent or vulcanite or composition are used to help to retain the needles in the floor of the mouth. These plates do not contain lead.

(*d*) Surface application to the tongue is not practised. In cases too advanced for needling, seeds are used and glossectomy by the diathermy is considered.

Treatment of the Cervical Area.

No neck should be left untreated, even if no glands are palpable, and the lesion in the tongue is small, the gravity of possible extension to glands is such that treatment cannot be omitted. In certain histological types and in patients under 50 years of age the prognosis entirely depends upon the early and vigorous treatment of the neck. The policy at present advocated is to divide the cases into three groups—namely: (1) unpalpable glands, (2) palpable glands, and (3) inoperable glands. The treatment differs in each group.

UNPALPABLE GLANDS.

This group is suitable for needling of the neck by the "closed method." The distribution of the needles must be accurate, extending from the mastoid process to the clavicle and providing efficient irradiation in the submental, submaxillary, anterior, and posterior triangles of the neck. With a little experience the needles can be placed in position without an operation for access. As an alternative to this method a radium collar can be employed, but as the treatment is entirely a prophylactic measure, a two-stage irradiation is not indicated. Needling is, as a rule, preferred by the patient, as it is somewhat less irksome than surface application.

PALPABLE GLANDS.

When the glands are palpable but small, mobile and absolutely operable, the choice of treatment lies between operative removal and "open needling" after providing access to the glandular area by surgical means. Surgical removal of the glands is only indicated if the following conditions obtain:—

(1) The primary lesion must have entirely disappeared.
(2) The glands must be absolutely operable.
(3) The general health of the patient must be good.

If the operation for the removal of the glands is undertaken, it must be a complete and wide excision. Half measures have no place in the treatment of the cancerous neck; an incomplete operation leaves the patient in a worse plight than before the treatment and must never be done, as irradiation offers so much more. The operation is variously known as Butlin's, Crile's, or "block" dissection, and is sufficiently well known not to require a description here.

The insertion of radium in the neck at the end of the operation is not advisable, and irradiation is much more efficiently carried out as a second stage by means of a columbia paste collar after the wound is healed.

If the surgical removal of glands is not undertaken the neck is needled by the "open method." Insertion of needles blindly into the neck in cases where the glands are palpable, but early and discrete, is not advisable; more freedom and, hence, greater accuracy is obtained by incising the neck along the sterno-mastoid, exposing both its anterior and posterior borders, dividing the common facial vein at a short distance from the internal jugular, and placing the needles in position under vision in close proximity to the enlarged glands; the submaxillary and submental areas are also needled.

INOPERABLE GLANDS.

When the glands are matted together and a fixed mass is present in the neck, palliation only is aimed at.

It is obtained by needling the mass and the surrounding tissues with a relatively large quantity of radium; the technique of needling in this case differs from that in the group dealing with palpable glands. The mass is literally filled with radium; seeds can be used here, and screenage is of lesser importance as the mass of tissue itself acts as a protection. It gives remarkable results at times. The interstitial method is followed two or three weeks later by surface application to the whole neck. The future will show if distance applications with the "bomb" will give better results than the methods here described.

CLINICAL AND LABORATORY NOTES

RAYNAUD'S DISEASE,

WITH PAROXYSMAL HÆMOGLOBINURIA.

By Harold G. Bywater, M.B., Ch.B. Liverp.,
RENAL SPECIALIST, MINISTRY OF PENSIONS, NOTTINGHAM.

Six months ago a child, aged 3 years, was taken ill after being aroused from sleep suddenly in the middle of the night and very much frightened by the intrusion of a drunken man into the house.

He had previously been in good health as far as the parents were able to judge, his only illness having been measles in infancy. He had been fed on Cow and Gate food. The mother had had one previous miscarriage and had subsequently had one other child, who appeared to be in good health. The father, who had never been a patient of mine, was said to suffer from bronchial catarrh in the winter time. He had seen military service. His blood was later examined and found to be Wassermann positive. The aunt, on the mother's side, who brought this case to my notice, had been under treatment by me for functional neurosis of an anxiety type for a period of six months.

NATURE OF ATTACKS.

Immediately after the alarming incident the child was noticed to have an attack of pain and coldness of his hands, feet, and ears. Several attacks had since occurred, the description of a typical one being as follows: When out in the cold the child would become suddenly doubled up with pain, and would cry and have to be taken home at once. The fingers, especially the index-finger of one hand, the toes, and sometimes the whole foot and the pinna of both ears would become black and swollen. On arrival home after such an attack the first specimen of urine passed would be dark coloured, but the colour of the next specimen would be normal. The child would fall asleep and was frequently quite well on awakening, although very nervous and frightened. Such attacks had occurred fortnightly for the past few months, and had increased in severity.

On March 21st, 1930, when I first examined the child, I found him lying on a couch looking very apathetic and atonic. He was pale, but the mucous membranes were not especially anæmic. The legs were wasted and weak, and he could not support his weight for long. There were frontal and parietal bosses, beaded ribs, and well-marked thickenings at the ends of the long bones. The tongue was slightly furred, tonsils slightly enlarged, and teeth very fine and small; no gingivitis was present. There was nothing abnormal in the heart and lungs. The abdomen was somewhat protuberant, and the liver was palpable, but the spleen was not. Reflexes were present and equal, though somewhat exaggerated. No objective changes in sensation could be made out. The optic discs were normal. There was slight œdema on the dorsum of the left foot. A specimen of urine was requested; a day or two later this arrived and was found to be port-wine coloured.

I examined the child at his home on March 24th. On this occasion he looked better than at my previous visit, and indeed got up and began to play with his toys, conversing quite happily with his parents for a few minutes. There was a violet discoloration of the pinna of both ears, and dark coloration of the index-finger of one hand; the feet were normal. The temperature was normal at both visits.

EXAMINATION OF URINE.

The urine was found to contain albumin and to give the guaiacum test for blood. It contained no red cells or casts. The deposit consisted mainly of indefinite brown masses which, when examined with a higher power, were seen to contain masses of pigment. On standing a little, numerous crystals of the coffin-lid variety were deposited (ammonio-magnesium phosphate). I took a specimen to the city laboratory, where Dr. Storer was kind enough to examine it, and he confirmed the absence of casts and red cells. He also demonstrated with the spectroscope the absorption bands characteristic of normal blood.

I was privileged to see a further attack which occurred on April 8th. The fingers and toes were blackish and swollen. There was œdema of the dorsum of both hands and feet and the ears were cyanosed. The child on this occasion passed port-wine coloured urine at mid-day (the attack occurred in the afternoon), and also after the attack. I have seen the child in two slight attacks since then.

Treatment has been directed towards the maintenance of warmth at all times, the addition of such articles of diet as were found to be deficient supplemented by preparations containing vitamins. Inunctions of mercury have been started.

The case is interesting as illustrating the type of Raynaud's disease occurring in children, where the process does not proceed to the stage of gangrene. The syncopal stage is extremely short and is barely noticeable, the asphyxial stage being the one observed. The profound neurotic history in the family, the influence of cold on all occasions, and the comparative rarity of the disease are interesting. It appears to be common in these cases to find a relationship with parental syphilis.

RETROPERITONEAL FIBROMA

ARISING FROM THE ANTERIOR COMMON LIGAMENT.

By W. H. Ogilvie, M.D., M.Ch. Oxf., F.R.C.S. Eng.,
ASSISTANT SURGEON, GUY'S HOSPITAL.

The only interest in the following case, and my only excuse for publishing it after a lapse of eight years, is the rarity of the condition. The presence in a woman of 55 of a large mass in the abdomen, quite fixed and of almost stony hardness, made malignant disease the only reasonable diagnosis. On the other hand, there was no point in the history, symptoms, or preoperative findings to indicate the organ involved. Operation was undertaken purely for purposes of exploration.

A thin married woman, looking more than her age of 55 years, came up to the surgical out-patient department at Guy's Hospital complaining of a throbbing sensation in the upper abdomen, which she had noticed for three months. This was the only thing of which she complained. There had been no vomiting, loss of weight, or pain, nor had she noticed any lump. All her bodily functions were acting normally.

On examination a prominence was immediately visible, occupying the left upper quadrant of the abdomen. This proved on palpation to be a hard solid mass, roughly oval in shape, firmly fixed to the posterior abdominal wall. It reached inwards to the mid-line, and downwards two inches below the umbilicus, while above it appeared to pass under the costal margin. It formed no prominence in the loin. It did not move on respiration, nor could it be moved passively. On percussion the splenic dullness appeared to be continued into that of the lump; over the most prominent part there was a band of resonance. The urine was normal. The fæces gave a weak guaiac reaction, but no blood spectrum. The Wassermann reaction was strongly positive. An X ray showed the stomach displaced downwards and outwards by a large mass in the region of the lesser omentum, suggesting a pancreatic cyst.

Laparotomy was performed on May 25th, 1922, through a left paramedian incision. The stomach, splenic flexure

and descending colon were seen to be carried forward on a large retroperitoneal mass, over the summit of which ran the inferior mesenteric vein. The left kidney could be felt behind the upper pole of the swelling. An incision was made outside the descending colon, and the peritoneum and vessels were displaced inwards as far as the aorta. A smooth, oval tumour, 2½ by 4 inches, was thus exposed, surrounded by a distinct capsule and firmly attached to the bodies of the second and third lumbar vertebræ. Three of the lumbar arteries entered the mass and the aorta was pushed slightly to the right. The lumbar arteries were ligatured at their origin and the tumour was separated by the knife from the anterior common ligament from which it appeared to spring, and shelled fairly easily from its capsule. The wound was sewn up, a drain being left in the extraperitoneal tissues for 48 hours.

Microscopic section showed the tumour to be a fibroma with much necrosis. Recovery was uneventful, the patient leaving the hospital perfectly well.

I am indebted to Mr. R. P. Rowlands, whose registrar I was at the time, for permission to publish this case.

INEFFECTIVE SWABBING IN DIPHTHERIA EPIDEMICS.

By Guy Bousfield, M.D. Lond.,
DIRECTOR OF THE CAMBERWELL RESEARCH LABORATORIES.

Extensive active immunisation is widely regarded as the only effective method of controlling diphtheria. With this view I have much sympathy, yet the fact must be faced that even at the present time, in spite of many years' experience and contrary teaching, many practitioners still rely on the result of a throat swab examination for the establishment of a diagnosis or the commencement of antidiphtheritic treatment. (See The Lancet, Sept. 13th, p. 587.)

I find that the majority of medical officers who attack an epidemic by means of swabs submit material taken only from the throat. At the most, only a sprinkling of nasal swabs, taken from children who have obvious nasal discharge, is included. I submit that this practice makes the search for carriers practically futile. In examination of many thousands of specimens taken during epidemics of diphtheria I have identified polar-staining morphological diphtheria bacilli relatively about ten times as often in nasal swabs as in throat swabs. The same may be said of swabs taken from children who must be certified as free from diphtheria infection before they can be admitted to a convalescent home or other institution. It is frankly admitted that quite a large proportion of morphological diphtheria bacilli isolated from nasal swabs proves to be non-virulent on animal test; yet exactly the same is true of bacilli found in the throats of persons who show no throat lesion.

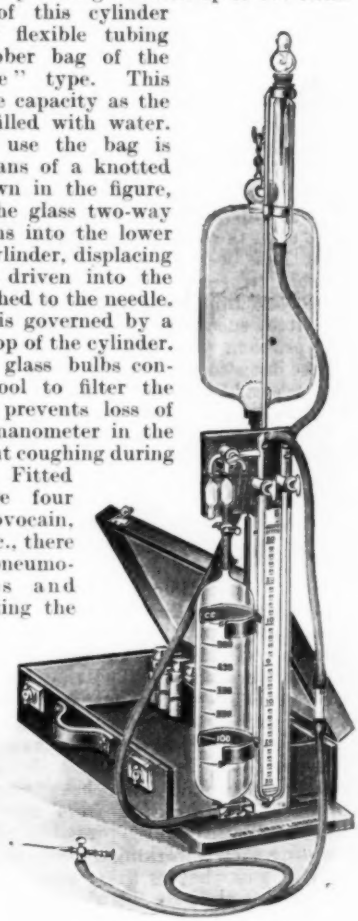
Anatomically the nose tends to empty its secretions directly to the exterior more than does the throat. During play and in the absence (or even presence) of the pocket handkerchief numerous opportunities for the spread of infection must occur. It is my firm belief that virulent diphtheria bacilli are disseminated more commonly from nasal than from pharyngeal sources, in many cases by carriers who show no obvious symptoms or lesion of nasal diphtheria.

A point of extreme importance is that positive nasal cultures (which may be virulent) are often obtained easily from persons whose throat cultures are consistently negative. This fact does not seem to be generally known. When a search is being made for carriers it is not enough to swab throats alone, and nasal swabs which have been inserted into *both* nostrils should also be submitted from each subject. In addition, any ear discharges must be similarly investigated. If expense does not exclude animal virulence tests, these should be undertaken in each case. When they cannot be done, the only safe procedure is to isolate all positive cases from the main community, whether the source of the bacilli was nasal or pharyngeal, until such time as local treatment has produced a series of negative swabs.

NEW INVENTIONS

ARTIFICIAL PNEUMOTHORAX APPARATUS.

This is a modification of the apparatus described by me nine years ago (The Lancet, 1921, ii., 710). In my former model the air reservoir consisted of a collapsible indiarubber bag. This has now been replaced by a glass cylinder graduated up to 600 c.cm. The lower end of this cylinder communicates by flexible tubing with a stout rubber bag of the "hot-water bottle" type. This bag is of the same capacity as the cylinder, and is filled with water. When ready for use the bag is suspended by means of a knotted silk cord, as shown in the figure, and on turning the glass two-way tap the water runs into the lower end of the glass cylinder, displacing the air, which is driven into the flexible tube attached to the needle. The rate of flow is governed by a screw clip at the top of the cylinder. There are three glass bulbs containing sterile wool to filter the air, and a trap prevents loss of water from the manometer in the event of the patient coughing during the operation. Fitted in the case are four bottles for novocain, iodine solution, &c., there is also room for pneumothorax needles and syringe for injecting the local anæsthetic. The manometer registers intrapleural pressure or pressure at which gas is being injected according to the position of the two-way tap. The apparatus can be used for both injection and withdrawal of measured quantities of gas, and its advantages are that it is easy to handle, it is light and compact, and it can be carried in any position.



The weight of the apparatus, which is made by Messrs. Down Bros., is 7¾ lb. and the outside measurements of the case are 19¼ × 9 × 4½ in.

Geoffrey Marshall, O.B.E., M.D., F.R.C.P.,
Officer i/c Tuberculosis Department, and Assistant Physician, Guy's Hospital.

BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN WINNIPEG.

(*Continued from p. 607.*)

SECTION OF MEDICINE.

Lord DAWSON presided over the first meeting of this Section and contributed a clinical introduction to a discussion on

Filtrable Viruses and Practical Medicine.

The importance of the subject was obvious, he said, when one recalled that such diseases as measles, mumps, small-pox, encephalitis, and the common cold of temperate climates, and yellow fever, dengue, and sandfly fever of the tropics, were caused by viruses belonging to the filtrable group. The technique given us by Pasteur and Koch, despite developments and improvements, had failed to reveal the ætiological secrets of these diseases, and light was first thrown on the problem by the researches of Ivanowsky and of Löffler and Frosch. The former investigator had shown that the agent of mosaic disease of plants, which was present in the juice expressed from affected leaves, was capable of passing through filters which held back the ordinary bacteria and of retaining its virulence unaltered for long periods. Löffler and Frosch in 1898 demonstrated that the virus of foot-and-mouth disease, present in the vesicle fluid, was likewise capable of passing through bacterial filters. Since then the number of diseases in which the causal agent had been shown to belong to this group of filtrable viruses had been steadily increasing, and at the present time had assumed a magnitude warranting unstinted encouragement of research in this field. This problem was not only of importance to medical science but also to veterinary medicine and agriculture, for diseases like distemper and foot-and-mouth disease of animals, and mosaic and other widespread diseases of plants, were known to be the work of agents belonging to this group.

Dr. S. P. BEDSON (London), in opening the discussion, regretted that much of the speculation on the nature of filtrable viruses had merely gone to heighten the atmosphere of mystery which always surrounded the unknown. In his opinion this fact was largely responsible for the difficulty experienced by clinicians in approaching the subject. Some workers had endeavoured to show that filtrable viruses were unorganised enzyme-like agents; others even had tried to persuade us that they were the product of diseased cells—a product which when brought in contact with fresh healthy cells gave rise to the same pathological process, the virus thus becoming both the cause and the result of the disease. Dr. Bedson thought it would have been more reasonable to approach the question from the standpoint that filtrable viruses were probably akin to bacteria. Adopting such a working hypothesis, the first question to solve was whether these viruses were living. Life was characterised by the ability to multiply, to adapt to alterations in environment, and to assimilate without loss of identity; and since viruses possessed these characters one was entitled to conclude that they were living. One factor more than any other had gone to obscure the relationship of filtrable viruses to the ordinary bacteria, and that was the limitation of visibility with the microscope. Undoubtedly, filtrable viruses were small, some of them truly inframicroscopic, but there was evidence that others—such as the viruses of small-pox, fowl-pox, and psittacosis—could be seen with the microscope. And since there were visible and cultivable bacteria which at the same time were filtrable, it seemed there was no good reason for separating filtrable viruses from the ordinary bacteria on the score of size. The difficulty experienced in cultivating filtrable viruses was another reason advanced for their being unlike bacteria. It had been found impossible to grow them apart from living cells, but recent work by Muckenfuss and Rivers suggested that the cells only supplied some diffusible substance necessary for the growth of the virus, so that cultivation in a lifeless medium might eventually be achieved. The more that one learned about filtrable viruses the greater did their resemblance to bacteria become, so much so that the speaker looked forward to the merging of filtrable viruses and bacteria in one large group, inside which, of course, there would be sub-grouping just as there was in the case of bacteria at the present time.

IMMUNITY TO FILTRABLE VIRUSES.

There was a similar tendency, said Dr. Bedson, to differentiate between the immunity produced by filtrable viruses and bacteria. It had become the habit to speak of immunity to filtrable viruses as being solid and lifelong, in contrast to the immunity incited by bacteria which was often weak and fugitive. But such a generalisation was only partially true, for there were virus diseases such as foot-and-mouth disease, herpes, and the common cold, one attack of which conferred little or no immunity, and bacterial diseases like typhoid fever which gave rise to a solid one. Here, again, it was impossible to draw a clear dividing line. With filtrable viruses as with bacteria it was possible to produce an active immunity which was associated with the development of specific antibodies, and with these antibodies it was possible to procure a passive immunity and demonstrate those in-vitro immunity reactions which were of such service in the case of bacterial diseases. Active prophylactic immunisation had been practised for some time in the case of small-pox and rabies. In the former disease use was made of the fact that the virus of small-pox, when adapted to the cow, lost its invasive power for human tissues; and although this method was good in that it produced a satisfactory immunity, it was not without its dangers. Although opinion varied about the ætiology of post-vaccinal encephalitis there was little doubt that invasion of the body by the vaccinia virus was directly or indirectly responsible. This had led to the advocacy by the Ministry of Health in England of vaccination by one insertion with minimum trauma and, with a similar object in view, dilution of the lymph had been practised at the London Hospital and in Germany. In the case of rabies attenuated virus was used for immunisation, and it was long thought that this method was not applicable to other filtrable viruses. But recent work by Vallée and his colleagues and the British Foot-and-Mouth Committee had shown that the foot-and-mouth virus still retained its antigenic properties when rendered inactive by means of low concentrations of formalin. The same thing had since been found true for the viruses of distemper, fowl-plague, and yellow fever; and in distemper prophylactic vaccination had been practised in the field with success.

PASSIVE IMMUNITY AND DIAGNOSTIC REACTIONS.

The use of convalescent serum in poliomyelitis was well known in Canada, but perhaps the efficacy of serum in the prophylaxis of measles was not so generally realised. Measles convalescent serum given in suitable doses within the first five days after exposure to infection resulted, as a rule, in complete protection, and given later from the fifth to eighth day modified the attack. The use of serum was of

the greatest service both in private practice and in institutions and hospitals. Dr. Bedson referred to the work of Gordon, Netter and Urbain, Ciuca and others, showing that both specific flocculation and complement fixation could be demonstrated with filtrable viruses and their antisera, and he cited the work of Burgess, Craigie, and Tulloch, showing the value of the flocculation test as an aid to the diagnosis of small-pox. He mentioned the work done by himself and Dr. J. O. W. Bland in connexion with the complement-fixation reaction and cited examples of its practical application. In conclusion, he said that though some of the problems in this field of research seemed almost insuperable, the progress already made should encourage perseverance. Those who came before Pasteur must have been faced by problems no less difficult.

DISCUSSION.

Dr. N. E. McKINNON (Toronto) confined his remarks to the contributions which Canada had made to this question of filtrable viruses. He spoke of the excellent work done in Winnipeg in connexion with the use of convalescent serum in poliomyelitis. During the recent epidemic 66 cases received serum; only 4 of these developed residual paralysis and none died, whereas of 54 cases not receiving serum, 34 developed residual paralyses and 6 died. The dosage used was 20 c.cm. intramuscularly. Although the efficacy of measles convalescent serum was known in Canada it was not used as extensively as it should be. Between the years 1921–29 there were 5000 deaths from measles in Canada; this considerable mortality could undoubtedly be materially reduced by the more extensive use of convalescent serum. He referred to the apparent freedom from post-vaccinal encephalitis in Canada and said that he was inclined to attribute this to the method of vaccinating. In Canada the practice was to vaccinate either by a single scratch 1/16th in. long or by single puncture; the former method was preferable, for it gave a higher percentage of takes. In conclusion, he referred to a small outbreak of psittacosis which had been thoroughly investigated from the clinical and epidemiological standpoint.

Dr. D. N. NABARRO (London) spoke of the serum prophylaxis of measles. He mentioned the various sera which had been advocated—Degkwitz's serum, the serum prepared against the green streptococcus of Tunnicliff, and human convalescent serum, and said that of the three the last was the only satisfactory one. He gave the results of the use of convalescent serum at the Hospital for Sick Children, Great Ormond-street. Serum from adult convalescents alone was employed, and before being used this was submitted to filtration and stringent tests for sterility. Out of the 586 cases which had received serum only 21 were not protected, and the majority of these developed a modified measles. He considered that the use of convalescent serum was of the greatest service in hospital practice.

Prof. A. W. M. ELLIS (London) said that the question of filtrable viruses could be approached from a variety of points of view. One thing which struck him most forcibly was the evidence pointing to the high percentage of carriers of filtrable viruses. He instanced herpes in man, certain diseases of plants—of the potato in particular—and possibly the encephalomyelitis complicating vaccination and many of the specific fevers. The ancients had been wont to speak of disease coming from within, but advance in our knowledge of the causation of disease had reversed matters, and disease was usually spoken of now as coming from without. The evidence which the study of filtrable virus diseases was bringing to light required an alteration in our conception of disease.

Dr. BEDSON, in reply, said that he was in entire agreement with all that Dr. McKinnon and Dr. Nabarro had said. He considered that the point raised by Prof. Ellis was a most important and interesting one. Virus carriers did undoubtedly exist, and the evidence available suggested that the balance established between host and virus could be upset by a variety of factors with the result that disease ensued.

Functional Disorders of Colon.

Dr. EDMUND SPRIGGS (Ruthin), in introducing at the second session a discussion on this subject, said that there was no organ about which there had been more difference of opinion. Abandoned by Metchnikoff as a useless relic, stormed by surgeons who removed pieces, or, when most merciful, stitched it up, laved with many waters by physicians and dosed by the public, it had been, and was, a battlefield, the Flanders of medicine. It was, indeed, fortunate that the large bowel, though easily injured by wrong habits or treatment, had great power of recovery. For knowledge of the diseases of the colon the profession owed much to Sir William Hale-White, whose papers from 1888 on classified these disorders, with clinical descriptions that have not been surpassed. In 4000 cases under Dr. Spriggs's care a note concerning the colon was made in 2086 by Dr. Mary Watson. In many the only mention was of delay. In 1543 some other major or minor abnormality was noted from the symptoms, signs, motions, or X ray examinations. The distribution of the lesions or disorders was as follows: obstruction, 19; parasites, 20; ulcerative colitis and colitis gravis, 29; dysenteries, 29; growths, 32; loops and redundancies, 45; colectomy, colostomy, and colopexy, 51; adhesions, largely post-operative, 85; mucous and mucomembranous colitis, 164; coloptosis, 202; diverticulosis and diverticulitis, 297; disorders of tone and segmentation, 570. The last group included 198 with excessive tone and spasm, and 84 cases of irritable colon with prominent clinical symptoms but little or no mucus.

The conditions classed by Dr. Spriggs as functional were colonic delay or constipation, irritable colon including nervous diarrhœa, spastic colon, mucous colitis or catarrh of the colon, and mucomembranous colitis. The word colitis, he remarked, is not strictly correct, but is used. In 141 consecutive cases of coloptosis, in 27 per cent. there was great delay, in 55 the rate of passage of the barium meal was normal, and in 35 others the delay was moderate only. Hence, in more than half, retardation was inconsiderable. It did not matter where the colon lay so long as it passed on its contents normally. Symptoms arose from dropping per se in severe cases only. Among the ætiological factors were mentioned infections, parasites, exposure and other injuries, and the two main causes—neurosis and constipation—were discussed. Dr. Spriggs suggested that the usual treatment for constipation—namely, irritating aperients—taken over long years was as potent and frequent a cause of colitic disorder as constipation itself. This was confirmed by the good result of withdrawal and by an analysis (by R. Picton-Davies) of 1000 cases of radiological delay under the speaker's care. Of these, 236 were unaware of constipation, and 764 complained of it. Of the latter, 670 were taking aperients, 436 every day. In 242 cases of mucous colitis and irritable colon, in roughly half there was or had been some other lesion or suspected lesion of the alimentary tract, the most prominent

being appendicitis, disease of the gall-bladder, and ulcers of stomach or duodenum. These cases should be observed carefully, and the practice of operating first and investigating afterwards avoided.

Under the heading of pathology, the view was put forward that sluggishness of the bowel leads to venous stasis, with diminished absorption of gas, and that interference with motility may be a cause of flatulence more than the usually alleged fermentation. Redundant loops were mentioned, and the *bacteriology* reviewed. Experimental grounds for indiscriminate vaccines were, said Dr. Spriggs, lacking. The estimate of what value they might have rested on a clinical and not on a scientific basis. Statistics of cultures were quoted, showing that streptococci were less common in constipated, and more so in loose motions. From the results of 2000 cultures it appeared that in the present state of our knowledge, repeated culture of the motions in these disorders, after the preliminary diagnostic examination for organisms known to be pathogenic, was not worth the time and labour involved.

The chief symptoms were: abdominal pain or discomfort, 80 per cent.; poor appetite; nausea, 24 per cent.; vomiting, 16 per cent. Constipation was usual and many complaining of diarrhœa showed with X rays delay in the bowel. The incidence was also given of weariness, depression, headache, malaise, palpitation, heart pains, shivering and cold hands and feet. Among signs it was mentioned that in 111 cases the gastric juice was superacid in 41 per cent.; subacid in 23 per cent.; achlorhydric in 2 per cent. As regards colonic delay, proved radiologically in the 1000 cases quoted, the delay was in the whole colon in half, and in the sigmoid or rectum, or both, in one-third. Cæcal delay alone was rare (1 per cent.), and often means local inflammation; 289 complained of headache and 181 were depressed or neurasthenic. Stress was laid upon inspection of the motions.

The main rules of treatment were these: to allay anxiety, to abolish laxatives and purges, to give a suitable diet, and to regulate rest and exercise. In severe cases it might be necessary to remove the patient for a long period from surroundings in which the derangement arose. The patient was often convinced that it was harmful for material to lie in the colon for more than 48 hours; that if an action did not take place in the morning an aperient should be taken that evening, that the large semi-fluid motions produced by aperients, to yield which a great part of the colon was emptied, were beneficial; that an ordinary formed motion due to the emptying of the lower sigmoid was not enough; that abdominal disorder and loss of vitality were lessened by the use of aperients. In the main, said Dr. Spriggs, these opinions were wrong and he gave reasons for thinking so. Diet suitable for different cases varied from a bland one in severe cases (used in 42 per cent. of this series) to a rougher diet in milder ones. The use of paraffin, massage, baths, intestinal douches, exercise, electrical treatments, rest (including mental rest), and other measures was discussed. Drugs such as belladonna, hyoscyamus, intestinal antiseptics, castor oil and salines, were mentioned, also special measures for severe mucous colitis, spastic cases, and nervous diarrhœa.

Experience of surgical operations for functional disorders of the colon was, said Dr. Spriggs, unconvincing. No operation had been or would be devised which would make a man out of training fit to run a race. In these patients the bowel was out of training and surgery as a means of restoring its powers is usually futile. The results of the treatment of 208 cases were quoted. 34 per cent. were treated in bed at first, 64 per cent. with douches, 11 per cent. with castor oil. In 90 per cent. much benefit was obtained from a course averaging 6·7 weeks in length. If time be given relief is nearly always possible and cure is frequent. Each patient should follow detailed instructions under the care of his doctor on returning home.

"These diseases do not kill," the speaker concluded, "but they cause weakness and misery. If we can educate doctors as a profession and the public in regard to the hygiene of the colon, a great addition will have been made to human health and happiness."

DISCUSSION.

Dr. E. E. CLEAVER (Toronto) gave an account of modern work upon the structure and functions of the colon, its movements, control by nerves, and, as shown by Hurst, its lack of sensation except at the lower end. Digestion, absorption, and secretion in the lower bowel were assessed, the main function being that of a reservoir. Much prevalent derangement could be avoided if the diagnosis were made by the doctor and not by the patient.

Dr. HUGH BARBER (Derby) said these disorders could often be cut short. Although predisposed to by a sensitive nervous system, they occurred at the periphery, and were only partially controlled by the central nervous system. Thus, in nervous diarrhœa, belladonna with bromide would quiet the irritable colon, and the patient then finds that faith would play its part, the peripheral control teaching a lesson to the higher centres. Fatigue was a cause—e.g., in a schoolmaster at the end of term. Mucus was due to too much purgation as well as to hard fæces. The intractable chronic states would seldom occur if the doctor had had a chance to advise or control at the beginning.

Prof. THOMAS MCCRAE (Philadelphia) put nervous predisposition first in his list of causes, and constipation with the use of laxatives second; later, the problem was a mixed one. He spoke of the harmful character of some popular health articles, and of advertisements of aperients and food fads in the lay and medical press. The word "autointoxication" ought, he said, to be cut out of the terminology. Organic states must be excluded and especially diverticulosis. The prostate should be thought of also in men. Allergy in this class of disorder might be striking, but examples were uncommon. He agreed with Dr. Spriggs's conclusions about aperients, visceroptosis, bacteriology, and the importance of inspection of the whole stool, not a sample. Some needed a special diet, but in others the best therapy was to tell them to forget both diet and colon. He used irrigation, but less than formerly. The value of surgery in these complaints was illustrated by the reply of a schoolboy to a question about Caligula. Knowing nothing, he wrote, "the less said about Caligula the better," and received full marks.

Prof. T. GILLMAN MOORHEAD (Dublin) said that the function of the colon was of importance, but not its position. It was undesirable to make a diagnosis to the patient of dropped colon, as it was hard afterwards to get the idea of abnormality out of his or her head. Abdominal belts should not be used unless the abdomen was pendulous. He agreed with the strictures on the abuse of aperients, but they could be taken in moderation for years by those who were not nervous without harm.

Prof. WILLIAM WRIGHT (London) said that reflex mucous colitis was especially likely to be caused by disease in structures, such as the hip and the prostate, which were supplied with nerves from the same part of the cord as the sigmoid. The great variations in

the anatomy of the lower colon must not be forgotten. The rectal valves might form an almost complete diaphragm, or the ampulla be large, causing lodging of fæces with mucous discharge.

Lord DAWSON OF PENN agreed with the retention of the term "colitis" for these cases. Labels were needed and the doctor should not mistake them for the things labelled. The tendency to an unduly responsive abdomen was inborn and was associated with low blood pressure. The high tension patient took the strain in other ways. He was satisfied that flatulence was due to disturbance in motility more than to fermentation; in some the distension came on rapidly from mental causes. Many of those people were attempting more than they could do, trying to put a quart into a pint pot. Attacks in some were brought on by taking food too soon after fatigue and exposure, and could be avoided by resting and warming the extremities before the meal, which should then be simple, sometimes just bread and milk. Otherwise diet should not be strict because such detail raises the abdominal consciousness. Exercise is needed, but many overdo it at week-ends. Repose for body and mind for half a day or a day a week was recommended. He had the impression that pancreatic and duodenal preparations were sometimes of value, and, for the overstressed, bromide and adalin. He endorsed the necessity of understanding the patient's outlook, and allaying hidden fears and misinterpretations. This was best done by incidental conversation, plain reasons being given for the advice tendered.

Dr. EMMET KEATING (Chicago) said it was of special importance to avoid palatable aperients. He used Epsom salts which, on account of the unpleasant taste, the patient would be less likely to take to excess.

REPLY.

Dr. SPRIGGS said that most of his patients in this series had a low blood pressure. The average of the 242 cases was 128/77, and the average age 43. Dr. Hurst's account of the gastrocolic reflex had been confirmed by Mr. Marxer. He was interested in Prof. Wright's reference to the nervous supply of the sigmoid for left sciatica, and herpes of the lumbar and sacral nerves were, he had found, unduly frequent with lesions of the sigmoid, especially diverticulosis. Bile preparations were sometimes useful. Purges, if needed, should be prescribed by the doctor like other medicines. If a belt was to be used for a dropped stomach or colon, its efficiency should be tested by screening with the belt on and off, with some barium in the stomach or colon, or both.

Sea Sickness.

Dr. T. GWYNNE MAITLAND (Liverpool) described a long and interesting series of observations by himself, Group-Captain Martin Flack, R.A.F.M.S., and Dr. J. R. Marrack. He discussed the kinds of movement that cause vestibular nausea, referring to the pitch, roll, yaw and ascent of a ship at sea; also airplane and train sickness. Quick movements, such as trotting on horseback, do not cause these symptoms. The points were illustrated by models of the internal ear and by a revolving chair. Although the complaint had not its former terrors, there was no panacea; and some seasoned sailors never became immune. The facts that in many equilibrium soon adjusted itself and that the average storm abates in two or three days were sometimes forgotten when the value of remedies was assessed. They had tested, with controls on the same ship, over 70 proprietary remedies. None of these was a certain preventive or cure.

SECTION OF SURGERY.

ON the second day of the meeting this Section held a symposium on the uses of

Radium in Surgery.

With one exception the contributors were British workers, and the discussion as a whole gave an adequate presentation of the recent work on radium in this country. It was the more to be regretted, therefore, that no one was present who could give an account of radium treatment of cancer of the breast, such as has been carried out during recent years at St. Bartholomew's Hospital.

CARCINOMA OF THE RECTUM.

The discussion was opened by Sir CHARLES GORDON-WATSON (London), who reported his recent work on the treatment of carcinoma of the rectum. One of the great advantages offered by radium was the possibility of curing the disease without recourse to the colostomy that was inevitable during some stage of treatment when present-day surgical methods were employed. The problem of radium versus surgery, however, was complicated by the recent work of Cuthbert Dukes on the spread of cancer of the rectum. This work suggested that it was not necessary to excise the rectum completely in order to obtain thorough eradication of an early carcinoma which had not penetrated the wall of the rectum. If this work was substantiated it might be possible in the future to obtain a cure by more limited operations than were at present used, and without recourse to permanent colostomy. There was no doubt, Sir Charles said, that an early growth of the rectum could be destroyed by radium, without colostomy and without disturbance of the function of the rectum, but no observations were as yet available on a five-year basis.

He had, he said, treated 121 cases of carcinoma of the rectum with radium. Small growths could be destroyed with little or no resulting deformity of the rectum. The adenocarcinomas varied greatly in their radio-sensitivity, and it was desirable that attempts should be made to grade tumours histologically, and to correlate such findings with the radio-sensitivity of the tumour. Unexpected failures had been encountered in the radiation of early growths, but fortunately these failures could be made good by surgery. Rapidly growing adenocarcinomas in young people were more radio-sensitive than slow-growing tumours in elderly patients. In these the dose of radium required to secure complete retrogression of the tumour was very near the margin of tolerance of healthy tissues, and consequently radium burns were difficult to avoid. β-radiation should be reduced to a minimum. The speaker had used filtrations of 0·5 or 0·6 mm. of platinum, but in the future he intended to increase this filtration to 0·8 mm. He left the needles in the tumour for ten days. Radium was preferred to radon because of its uniform intensity of irradiation. For tumours of the perineal portion of the rectum, the results so far obtained were too uncertain to justify the preference of radium to surgery in the operable type of case. Carcinomas of the rectum that lay above the peritoneal reflexion were treated by radium when the tumour was fixed or when, in operable tumours, the age or state of health of the patient forbade an abdominal perineal excision. Transperitoneal radiation was essential in these cases, and it was a more risky procedure than perineal radiation, for there was danger of infection and consequent paralytic ileus or general peritonitis. Radon seeds were less dangerous than radium needles inside the peritoneal cavity,

but so far the end-results when radon was used were not encouraging. Radon or radium was also used inside the peritoneum for barrage treatment of the mesenteric glands. The speaker mentioned one excellent result in which an inoperable tumour fixed both to the bladder and to the sacrum had been treated by radium needles, and the patient was alive and well, with a normally acting rectum, three years after treatment. In other cases great symptomatic improvement had followed the use of radium.

Sir Charles then discussed squamous-celled carcinoma of the anus. This tumour responded much better than any of the others so far considered, and in early cases, immediate initial cure could be obtained by radium. The consequent avoidance of colostomy rendered this method preferable to surgery. The various methods and routes by which radium could be applied to carcinomas of the rectum were then considered, and the speaker closed with a plea for team-work between the physician, surgeon, pathologist, biochemist, and physicist to enable the radium worker to conduct his practice on a scientific rather than an empiric basis. He also showed a film illustrating implantation of radium needles into a rectal carcinoma by the perineal route.

ORAL CARCINOMA.

Radium treatment of carcinoma of the mouth and tongue was the subject of the next three papers by Mr. STANFORD CADE (London), Dr. DOUGLAS QUICK (New York), and Dr. G. E. BIRKETT (Manchester), whose paper was read by Prof. A. H. BURGESS. In many aspects there was remarkably close agreement between these three workers, and as a result there emerged a fairly authoritative declaration of the methods of treatment of buccal carcinoma. For treatment of the primary carcinoma all were agreed on the advantages of radiation over surgery, but whereas Mr. Cade and Dr. Birkett favoured radium needles, Dr Quick preferred radon seeds. In the opinion of the first two speakers it was difficult with seeds to obtain a uniform intensity of radiation, not only because the intensity of the radiation rapidly diminished within a period of four days, but also because the small seeds could not be so accurately placed as the larger needles. Carcinoma of the posterior part of the tongue, especially in or near the vallecula, and the lingual tonsil, was much more radio-sensitive than the more differentiated carcinoma of the anterior part of the tongue, but it was prone to give rise to early metastases. For the treatment of metastases of the neck that were operable, all the speakers favoured free surgical excision on the lines laid down by Crile. They stressed the importance of very radical removal and urged that the operation should only be carried out by those who were especially trained and practised in its performance. An incomplete dissection of the neck was worse than useless. When there were large inoperable metastases the glands should be actively treated by radium needles in large doses and the balance of opinion favoured open operation as the method by which this treatment should be carried out. For early cases in which no palpable metastases could be found there was sharp divergence of opinion as to the treatment of the neck. Dr. Birkett advocated a waiting policy, provided the patient reported for examination once a month. Mr. Cade and Dr. Quick, on the other hand, believed that the neck should never go untreated. Mr. Cade advocated needling of the neck by the closed method, or as an alternative external treatment by means of a radium collar. Dr. Quick employed heavily filtered high voltage X radiation, and more recently a four-grain radium element pack. Speaking of the radium bomb at the Westminster Hospital, Mr. Cade felt that it was too early to form a judgment of its value, but he did feel that it was not an economic method of using radium, for the same amount of radium used in the form of needles would treat ten patients where only one could be treated by the bomb. Dr. Quick stressed the importance of cleaning the mouth before treatment of the neoplasm was begun, and as a preliminary to irradiation of the primary tumour, he recommended external irradiation of the neck and the site of the primary growth for a period of two weeks. The results of treatment reported by the speakers cannot be adequately reported in abstract, but the impression formed was that radium treatment gave results that were definitely better than those of surgery alone, especially when it was remembered that healing was attained with no impairment of speaking, eating, and drinking. Dr. Birkett made a strong plea for the concentration of radium treatment at large centres.

CARCINOMA OF THE BLADDER.

Mr. FRANK KIDD (London) reported the results of treatment of 32 cases of carcinoma of the bladder by radon seeds after preparatory diathermy. In some cases the treatment was administered by open operation, in others by the cystoscope. Sixteen cases were alive and well for periods up to eight years, and two others were still living, but showed evidence of recurrence. In some of the fatal cases the use of radon had appeared to accelerate the course of the disease. It was sometimes difficult to estimate accurately the extent of the tumour, even at open operation, and the results were still not predictable with any certainty. There had been some very encouraging results, and further work along these lines was indicated.

CENTRAL NERVOUS SYSTEM.

Mr. HUGH CAIRNS (London) reported on work done during the last three years in the use of radium in the central nervous system. For a variety of reasons it was highly desirable that radium should be given an extensive trial in the treatment of malignant intracranial tumours. These tumours were unlike most of those hitherto treated by this method, as they did not give rise to systemic metastases. The greatest problem of the neuro-surgeon in doing radical extirpations of infiltrating intracranial tumours was to avoid maiming the patient by removing healthy nervous tissue. If radium could be shown to have a selective action on malignant gliomas, a great advance would be achieved in the treatment of these tumours. Results so far observed gave evidence that in certain types of glioma radium had a destructive effect on the tumour. It was too early as yet to pronounce on the results of radium treatment in this field. In assessing the results it was necessary to distinguish clearly between symptomatic improvement that followed relief of hydrocephalus and that which was actually due to destruction of tumour tissue. The methods of using radium and radon in intracranial tumours were briefly described.

GENITO-URINARY TRACT.

Mr. CLIFFORD MORSON (London) discussed the radium treatment of malignant diseases of the genito-urinary tract. By far the most favourable of all these neoplasms was carcinoma of the penis. He had treated seven cases of this disease with radium, and had had six successful results. The one failure had been due to pyogenic infection.

Throughout the meeting emphasis was laid on the view that radium should not be regarded as a panacea for cancer. The whole discussion was conducted in a critical spirit. It was evident that much more work was necessary in all fields before the position of radium in treatment could be properly assessed, but the general attitude was one of cautious optimism.

The Sympathetic Nervous System.

On their final day the Surgical Section considered various aspects of the physiology and the surgery of the sympathetic nervous system. Dr. W. J. MAYO (Rochester, Minnesota) opened the discussion by giving an historical account of the discovery of the anatomy and physiology of the sympathetic ganglia and rami, mentioning the contributions of Winslow, Pourfour du Petit, Haller, Remak, Müller, Claude Bernard, and Gaskell and the Cambridge school. He pointed out that the surgical approach to the sympathetic involved the wider problem of the relation of this system to the endocrine glands. Dr. Mayo was unwilling to admit that removal of a single adrenal caused any permanent disturbance in the physiology of the organism, and he therefore questioned the wisdom of such a procedure in patients suffering from high blood pressure. In closing, he referred to the effect of ramisection on conditions such as arthritis, Raynaud's disease, and the Buerger syndrome, and asked whether certain kidney disturbances and coronary disease may not be an end-result of a similar vasospastic process, and whether early sympathectomy might not prevent the onset of angina pectoris and allied disturbances.

THERAPEUTIC RAMISECTION.

Dr. N. D. ROYLE (Sydney, Australia) followed with a paper entitled the Clinical Results following the Operation of Sympathetic Ramisection, in which he stated that he had performed the operation 600 times, with a mortality-rate of 0·5 per cent., —i.e., three deaths. The operation was introduced by him originally in October, 1923, for the treatment of spastic paralysis, and, excluding extrapyramidal conditions, 70 per cent. of the patients so treated have, he said, been distinctly benefited. A large proportion of them have been followed carefully, and end-results were summarised. More recently Dr. Royle had used the operation experimentally for treatment of the following conditions: parkinsonian rigidity (results poor); Hirschsprung's disease (results excellent in all cases); sarcoma of the femur (relief of pain); Raynaud's and Buerger's diseases (results gratifying, better, however, in the former condition); writer's cramp (one case, relief); poliomyelitis (results poor); condition simulating tic douloureux (one case); retinitis pigmentosa (five cases; recovery of vision following extirpation of thoracic sympathetic). The most important new development relates to Dr. Royle's discovery that retinitis pigmentosa responds to sympathectomy to a degree that caused the recovery of 20/30 vision in one patient whose visual acuity had previously been reduced to shadow perception. Royle still enthusiastically favours the operation of ramisection in cases of spastic paralysis.

PHYSIOLOGICAL PRINCIPLES.

Dr. J. F. FULTON (Oxford), who discussed the physiological basis of the surgery of the sympathetic system, described first the relation of this system to the general physiology of the organism, mentioning Claude Bernard's prediction that regulation of the internal activities of the animal body is carried out by the nervous system, and alluding to the recent discovery that the centres of the autonomic system lie in the hypothalamus (J. Beattie, G. R. Brow, and C. N. H. Long [1]). In discussing the mechanism of postural responses, Dr. Fulton pointed out that the stretch reflex, which is at the basis of posture, is abolished by sectioning of either the posterior or the anterior roots, but not by sympathectomy, although the transient diminution in rigidity occurring in spastic cases after ramisection suggests that the operation may cause an increase in threshold for eliciting the stretch reflex. From the physiological point of view the justification for the employment of ramisection in cases of hypertonia is still an open question. The operation of periarterial sympathectomy is without anatomical or physiological foundation —i.e., there are no long vasoconstrictor fibres passing distally in the larger arteries. The operation may, however, be useful for the relief of intractable pain. Apart from certain visceral conditions, such as Hirschsprung's disease, the only clear-cut indication for sympathectomy is ischæmia. Any pathological process in which healing would be greatly accelerated by an increased blood-supply offers an indication for ramisection, especially if the morbid process threaten the existence of an extremity. Since collateral circulation in a limb is established more readily after ramisection than with vasoconstrictors intact, an extremity in gangrene from thrombosis should not be amputated without first giving it the benefit of ramisection. It was emphasised that conditions improved by sympathectomy are not due necessarily to hyperactivity of the sympathetic.

SUCCESSFUL OPERATIONS.

Dr. J. R. LEARMONTH (Rochester, Minnesota) emphasised that the action of both parasympathetic and sympathetic nerves upon the bowel and bladder should be regarded as a means of harmonising an important physiological necessity—the disposal of the waste products of the body. Operations upon the sympathetic nerves of the bowel are indicated in cases of nervous imbalance, such as Hirschsprung's disease, and constipation due to dulling of the defæcation reflex. He described a new operation by which the whole sympathetic nerve-supply to the lower colon, the rectum, and the internal anal sphincter could be interrupted, with preservation of the vasomotor nerves to the limbs. In the case of the bladder, he described two cases in which defective micturition, due to lesions affecting the parasympathetic pathway, had been rectified by division of the sympathetic nerves to the bladder, and advanced the hypothesis that these nerves might mediate an inhibitory action on the musculature of the human bladder. He also described cases of vesical dysfunction which had been benefited by removal of agents compressing the dural sac under a lumbar or sacral spina bifida occulta. The operation of total denervation of the bladder was also referred to.

Dr. R. B. WADE (Sydney, Australia) gave a report of progress concerning the treatment of Hirschsprung's disease. He has now carried out left-sided lumbar ramisections for this condition in 14 cases, and has had striking improvement in all but one instance, with the establishment of regular bowel movements and normal control of the anal sphincter. The unsuccessful case responded temporarily, however, when the rami on the right side also were sectioned. The unilateral operation has been employed in many cases of chronic constipation with satisfying results. Dr. Wade is of the opinion that Hirschsprung's disease is due chiefly to over-action of the O'Beirne sphincter.

[1] Proc. Roy. Soc., B., 1930, cvi., 253.

VASCULAR CHANGES IN EPILEPSY.

Prof. W. G. PENFIELD (McGill) read a paper on Vascular Changes Observed in the Brain during Epileptiform Seizures. He mentioned at the outset that he had been able to demonstrate small medullated nerve-fibres supplying a large proportion of the cerebral blood-vessels; he then described three cases of epilepsy in which, during exposure of the brain under local anæsthesia, sharply circumscribed areas of anæmia appeared at several points in and about the motor area in the course of several carefully studied focal seizures. In the second case, one of the recorded seizures consisted merely of clonic twitching of the eyelids and turning of the eyes to the right, and the seizure was associated with an isolated area of chalky pallor in an area corresponding to the frontal eye field. In some circumstances the larger cerebral arteries were seen at several points to constrict sharply, giving a beaded appearance to the whole vessel. Dr. Penfield concludes that since stimulation of the sympathetic never causes such extreme vasomotor activity, the cerebral vessels must receive some innervation other than the sympathetic, and therefore that surgical extirpation of the sympathetic in epilepsy is of dubious value.

PERIPHERAL VASCULAR DISEASES.

Dr. A. W. ADSON (Rochester, Minnesota), who dealt with the Indications for, and the Therapeutic Value of, Sympathetic Ganglionectomy and Trunk Resection in the Treatment of Peripheral Vascular Diseases, mentioned the two existing theories concerning the origin of Raynaud's disease; one, upheld by Lewis, who maintains that the vascular spasm is due to a purely local condition in the tissues affected, while Adson and others contend that the disease results from hyperactivity of vasoconstrictor reflexes, and that the fault, therefore, lies in the central nervous system. Dr. Adson pointed out that in his cases, after complete removal of the vaso-constrictors supplying the lower limb, it is impossible to evoke vasomotor spasm, however intense the stimulus. The occasional persistence of spasm in the upper extremities was attributed to failure to remove all fibres. The more favourable results from the radical procedure recently introduced for the upper extremity supports this inference. At the Mayo Clinic the suitability of a case for operation is determined by a "vasomotor index"—i.e., the ratio of the rise of temperature in the extremities to that in the mouth in fever produced by injection of typhoid vaccine. Adson also has proved that retinal arteries dilate after thoracocervical ramisection. In concluding, Dr. Adson showed his first case of Raynaud's disease operated on five years ago, which had remained free of symptoms during that period (lower extremities), and also a case of Buerger's disease in which the morbid process had been successfully arrested in the upper extremities two years previously.

At the end of the discussion, Lord MOYNIHAN read in title a paper by S. H. HARRIS and R. G. S. HARRIS, of the Urological Department of the Lewisham Hospital, Sydney, on Renal Sympatheticotonus and Renal Sympathectomy. The operation which they describe was introduced in the hope of relieving certain obscure cases of persistent renal pain. The paper detailed the nerve-supply of the kidney, the operative technique for denervation of the kidney, and the indications for the new procedure. Pain associated with delayed emptying of the renal calices and pelvis, together with dilatation of the pelvis, constitute the chief positive signs. The writers propose to consider at a later time the relation of this operation to nephritis and essential hæmaturia.

DISCUSSION.

In the discussion which followed, Dr. ROBERTSON (Toronto) described a case of spastic paralysis operated on in his clinic by Royle three years ago, in which the result was distinctly favourable, and has remained so. He also mentioned several cases of arthritis and of Hirschsprung's disease, which have been successfully treated by ramisection.

Dr. FLOTHOW (Seattle) said that he had seen Dr. Royle's cases in Australia, and could confirm his claims. He then described a case in which some months after lumbar ramisection a cervical ganglionectomy was performed, and during the general hyperthermia (108°) which followed operation the lower extremity, whose lumbar sympathetic chain had been removed, showed evidence of extreme vasoconstriction.

Lord MOYNIHAN said that surgery was now entering an era which might aptly be termed an era of physiological repair. The divorce of physiology and anatomy that supervened at the close of the career of Sharpey had been unfortunate, and its ill-effects had persisted up to the present time. Lord Moynihan, however, seemed to discern the restoring hand of the surgeon. The synthetic action of surgeons begun by Dr. Royle was bringing physiology and anatomy together again, not by means of animal physiology, but by means of human physiology. The inaugural symptoms of disease should be studied by those who were familiar with normal physiology rather than with the pathology of the post-mortem room.

SECTION OF MENTAL DISEASES AND NEUROLOGY.

THIS Section met under the presidency of Sir FARQUHAR BUZZARD (Oxford), and its first discussion was devoted to abnormal mental and nervous conditions associated with

The Menopause.

Dr. GEORGE RIDDOCH (London) began by defining the involutional period as that phase of life during which the reproductive functions diminish and become finally extinct. He pointed out that men, as well as women, experienced this period of involution, although usually to a less degree. In women the climacteric period was a general reaction to ovarian deprivation. Much was still unknown about the nature of the reaction, but it was clear that the primary response was due to other endocrine glands, more especially those in most intimate functional relationship with the ovaries. Of these the supra-renals, pituitary and, in particular, the thyroid, played a leading part. Involved in the reaction was the nervous system, through its autonomic or vegetative portion, which was delicately influenced by, and in turn influenced, the so-called ductless glands, especially the thyroid and suprarenals. The reaction might be towards an increased or diminished activity, which was not uniform but in general varied with each gland, and also with individual constitution. Many of the symptoms of the climacteric were due to this glandular imbalance.

Maranon, said Dr. Riddoch, had insisted on the recognition of three stages in the clinical picture of the climacteric: (1) premenopausal, (2) menopausal, and (3) post-menopausal. Among the more usual symptoms and signs the most noteworthy were

emotional instability, vasomotor reactions, and change in sexual feelings. The tendency to hot flushes was important not only on account of the physical discomfort to which they gave rise, but even more because they aggravated the tendency to emotional instability.

Mental complications of the climacteric depended: (1) on constitution and temperament; (2) on the emotional and physical background; and (3) on preconceived notions about the climacteric. They fell into two groups—the psychoneuroses and the psychoses. Melancholia was, he thought, the commonest expression of a psychosis and the picture of involutional melancholia was distinct from the manic-depressive syndrome. Other varieties of mental disorder mentioned included chronic paranoid psychosis, confusional insanities, and mental disorder with or without polyneuritis or some other organic disease.

As regards prognosis, the speaker held that in the psychoneuroses the outlook was largely dependent upon how far the environmental incompatibilities could be overcome, and the attitude of the woman could be adjusted to the disappearance of youth and reproductive functions. In the pyschoses the prospect of recovery depended upon several factors, most perhaps on the reaction type of the illness, but also upon the physical health and general management and care. Whatever the mental illness might be, the prognosis was worse if it is complicated by cerebral arterio-sclerosis.

Treatment was discussed under the headings of prophylaxis, glandular therapy, and psychotherapy. In regard to prophylaxis, Dr. Riddoch thought that a good deal could be done for women who were approaching the climacteric. They should be protected from anxiety and their general bodily hygiene should be kept at as high a level as possible. They should be reassured and reminded that "the change" was a normal process safely endured by the majority. He had obtained little success with the various glandular preparations. He attributed his poor results partly to the lack of standardisation of these products, and partly to the small dosage often advised by the manufacturers. Thyroid extract should be carefully used where there were signs of myxœdema. Dr. Riddoch strongly opposed deep mental analysis, by which attempts were made to delve into unconscious processes. He thought this mode of treatment not only unwarranted but actually dangerous. He advocated special homes for the care of the psychotic.

STATISTICAL EVIDENCE.

Dr. C. B. FARRAR (Toronto) showed charts based on admission to the Toronto Psychopathic Hospital, between the ages of 40 and 55 between June, 1928, and June, 1930. In this group there were 739 women and 632 men, and the study seemed to justify the conclusion that abnormal mental reactions during the climacteric are more common in single than in married women; and that the maximum incidence comes well before the normal climacteric period. In males the peak is reached at a slightly later age. Dr. Farrar thought there was always more than one causal factor operating. The more important of these he listed as follows: (*a*) exaggeration of constitutional traits, 47·5 per cent.; (*b*) physiology of the menopause, 44·9 per cent.; (*c*) habitual menstrual variation, 9·8 per cent.; (*d*) early involutional changes, 8·1 per cent.; (*e*) psychology of menopause, 1·6 per cent.; (*f*) factors independent of life epoch, 26·2 per cent. Since over half of his cases were in good physical health he was not inclined to believe that physical disabilities were a potent factor in the production of abnormal mental reactions associated with the climacterium. He could draw no conclusions from his series regarding the occurrence of various types of physique. Pyknic and asthenic types were in the minority; 75 per cent. of his cases were discharged to their homes either completely recovered or greatly improved; 10·2 per cent. died in hospital and 15·2 per cent. were still in hospital. The length of hospitalisation varied from four and a half months to one and a half years.

CLINICAL VIEWS.

Dr. C. A. BARAGER (Brandon) maintained that the physical or structural changes of the menopause had not been sufficiently emphasised. Abnormal mental states are more common during the involutional period than at any other time. In his experience these states had been more common amongst women than men. He felt that recovery was to be expected. Early diagnosis from manic-depressive psychosis was often difficult or impossible. Schizophrenic reactions might also simulate the menopausal disorders. Prognostic results as seen by him were not as good as indicated by Dr. Farrar. Psychological changes, such as a change of outlook on life, played a great part in the production of these mental changes. A complete readjustment was necessary to everyone at this time of life.

Dr. J. G. MCKAY (Vancouver) believed that the outcome would be better if these cases were seen by the psychiatrist early. Differentiation of psychoneurosis from actual psychosis was often difficult, but each case should be treated according to its peculiar features rather than according to an artificial or arbitrary classification.

Dr. R. G. ARMOUR (Toronto) felt that the increased numbers of patients now taking advantage of mental hospital care was a good thing. The course of the illness in hospital patients was apt to be shorter than in those treated at home. He advocated the therapeutic use of ergotine and said he had had encouraging results with deep X ray therapy when this was begun early. This, however, involved early and accurate diagnosis. He admitted to poor results with glandular preparations.

Colonel HAMILTON, F.M.S., asked if the fact of a woman having borne children was likely to influence the severity and course of the condition. His impression was that women who had borne children got off more lightly than those who had not. He had used ichthyol therapeutically with good results. He was ignorant, however, of the rationale of its use, and expressed a desire to be informed.

Dr. RIDDOCH, in his reply, said he thought there was no essential difference between the so-called normal mental reaction of the climacterium and the psychoses, and that behind it all there was a physiological change. He said he spoke as one who saw early cases, in which the prognosis was usually good. The common factor in all forms of treatment was the influence of the doctor on his patient.

Dr. FARRAR closed the discussion. He said he felt sure that suicide was a danger in the psychoneurotic as well as the psychotic; and as the differentiation of severe psychoneurosis from psychosis was often difficult, the patient should be treated with the idea of suicide prevention in mind, even though it was not felt that an actual psychosis was present.

REVIEWS AND NOTICES OF BOOKS

Surgical Diagnosis.

By American Authors. Edited by EVARTS AMBROSE GRAHAM, A.B., M.D., Bixby Professor of Surgery, School of Medicine, Washington University. London: W. B. Saunders Co., Ltd. 1930. Vol. III. and Index. Pp. 1043. £7 10s. the set.

THE third volume and desk index now issued complete this work, of which the first two volumes were reviewed in THE LANCET, 1930, i., 866. The main subjects dealt with in the third volume are the thorax, the breast, the liver and pancreas, the rectum, the genito-urinary system, and the surgery of the central nervous system. In a work edited by Dr. Graham it is natural to turn first to the article on cholecystography in the section on diseases of the liver and bile-ducts. The author's fears that any reader might resent the amount of space devoted to this subject are groundless, for the pioneer of such a valuable method of examination is expected to give an authoritative account of its development, indications, and drawbacks. His descriptions are complete and very clear, and could not have been spared. The section on the breast is also full, is well illustrated, and contains a very readable account of the diagnostic problems of this difficult organ. The least satisfactory section in this volume, and indeed in the whole work, is that on diseases of the genito-urinary system. Starting on the assumption that urological diagnosis is essentially a specialty, the author attempts to set out general principles of diagnosis under the two heads of presumptive evidence such as should be gathered by the general physician, and positive findings which are the result of instrumental examination by a specialist. Even admitting that such a view may have its advocates, its exposition is lacking both in conciseness and clarity. This section consists solely of descriptive lists of the lesions of various parts of the tract, followed by extensive references to the literature in many languages, to which the reader must presumably turn for the information which he naturally expects the section to contain. A crowning incongruity is that this section, for whose synoptic form the only possible excuse would be lack of space, is followed by a chapter on bladder pressure in genito-urinary surgery in which nine charts of cystometrograms are given, whereas in the whole article on genito-urinary surgery there is only one picture of a cystoscopic appearance, and not even one of a pyelogram. The articles on the nervous system by Drs. Dandy, Adson, Dean Lewis and Ranson are admirable expositions of the subjects dealt with, and the illustrations in these sections are well chosen and reproduced. The inclusion of a desk index is a great convenience in a work of this size.

In the book as a whole there is much to praise. The majority of articles are clear and well balanced accounts by masters in their particular subject, and overlapping is in the main avoided. The paper, print, and illustrations could hardly be bettered.

A System of Clinical Medicine.

Eighth edition. By THOMAS DIXON SAVILL, M.D. Lond. London: Edward Arnold and Co. 1930. Pp. 1019. 28s.

THE special appeal of Savill's "Clinical Medicine" lies in the author's attempt to correlate all diseases by approaching them through their chief symptoms. The author tried to provide for the practitioner who is faced with certain symptoms at the bedside, a guide which will lead him to the disease or syndrome from which the patient is suffering. The book was eminently successful in this object. Medicine has, however, expanded considerably, if irregularly, since the book was originally planned in one volume and it is now difficult to compress useful descriptions of the general features of each disease as well as such aspects as prognosis and treatment into such a small space. Within the limits available, however, the descriptions are admirable. Twelve pages have been added to the eighth edition, and every part of the book has been revised. In addition to much completely new matter the chapters on diseases of the lungs and liver have been recast, and the sections on the pancreas, mental diseases, urinary examination, clinical bacteriology, and serum therapy have been rewritten. The general editorship is still in the capable hands of Dr. Agnes Savill. The book is excellently produced, and the illustrations are vivid pictures, not mere blocks reproduced from catalogues or ancient text-books.

Intracranial Pressure in Health and Disease.

Vol. VIII. of a series of Research Publications issued by the Association for Research in Nervous and Mental Disease. London: Baillière, Tindall and Cox. Pp. 519. 27s.

THE American Association for Research in Nervous and Mental Disease meets annually for the presentation and discussion of original papers upon a common topic, a practice which might with advantage be followed in other countries. It would be unreasonable in a publication of the work submitted to look for important discoveries. These cannot be produced to a conference time-table. The value of this, the eighth volume of the series of researches published by the Association, and its predecessors, lies in the opportunity given to the ordinary reader of bringing his knowledge of a subject up to date, and to the investigator of receiving some fertilising impulse from the ideas of other workers at his own problems.

This volume contains 31 communications divided into four sections. Section I. is devoted to the nature, mechanics, and general investigation of intracranial pressure. H. S. Howe brings forward evidence in favour of the absorption of the cerebro-spinal fluid into the cerebral capillaries instead of by the more generally accepted route of the intracranial venous sinuses. L. H. Weed adds a further contribution to the many which he has made to this subject, discussing, in particular, the influence of posture on cerebro-spinal fluid pressure. L. S. Kubie continues his important investigations of forced drainage of the nervous system, and there are other papers dealing with the experimental variation of the cerebro-spinal fluid pressure. Section II. is concerned with studies of decreased and increased intracranial pressure and is the largest section in the book. D. Munro reports an investigation of the cerebro-spinal fluid pressure in the newly-born, and advocates the reduction of raised pressures by lumbar puncture. J. B. Ayer contributes an analysis of the lumbar cerebro-spinal fluid in 67 cases of cerebral tumour. He emphasises the frequency with which some abnormality is found, but does not consider that the findings are sufficiently

valuable to justify lumbar puncture in the presence of grossly increased intracranial pressure. C. Barnert advocates the determination of the systolic and diastolic blood pressure in the central arteries of the retina by the method of Magitot as an aid to the early recognition of increased intracranial pressure. W. R. Parker discusses the relation between the tension of the eyeball and the onset of papillœdema, the pathogenesis of which is well reviewed by C. Berens. The visual field defects associated with increased intracranial pressure are the subject of a communication by G. E. de Schweinitz. The two papers which follow are studies by G. B. Hassin and W. Penfield, of the pathological changes produced in the brain by pressure, and a paper on X ray changes in the skull concludes this section. Section III. deals with some aspects of intracranial tumours and includes a paper by W. E. Dandy on the mechanism and symptoms of tumours of the third ventricle and pineal body, with special reference to ventriculography in these cases. In Section IV. various methods of reducing the intracranial pressure are considered, the concluding chapter being on radiotherapy. Readers of the work will find in all the communications something of interest and value in the diagnosis and treatment of conditions causing increased intracranial pressure.

Photo-processes in Gaseous and Liquid Systems.

By R. O. GRIFFITH, D.Sc., and A. MCKEOWN, D.Sc., Lecturers in Physical Chemistry at the University of Liverpool. London: Longmans, Green and Co., Ltd. Pp. 691. 25*s*.

THIS volume maintains the high standard set in the text-books of physical chemistry which are being edited by Prof. F. G. Donnan. It contains nearly 700 pages and deals with only one aspect of physical chemistry—namely, photo-processes. The authors state that the foundations on which the present-day photo-chemists must build are those branches of modern physical theory which are concerned with the interaction of radiation and matter. The reader, then, will not be surprised to find that nearly one-half of this book is devoted to theories of atomic and molecular structure, atomic and molecular spectra, and photo-luminescence. The book gives a very comprehensive account of the photo-processes in gases and liquids, both on the theoretical and practical side. In the chapter on photo-stationary states the application of this theory to vision is ably discussed, but the reading is not easy, and readers must be prepared for a mathematical approach to the subject.

Angina Pectoris.

By HARLOW BROOKS, M.D., Emeritus Professor of Clinical Medicine, New York University. London: A. and C. Black, Ltd. 1930. Pp. 164. 8*s*.

So much has been written on angina pectoris that unless an author has something new to say, or at any rate believes that he can express the old views more clearly than did his predecessors, it is difficult to justify the production of yet another monograph on the subject. In the second chapter of Dr. Harlow Brooks's book we were led to hope that his own series of 350 cases would provide interesting material. Had he contented himself with giving a simple analysis of his findings in this group he would have made a useful contribution to the literature; but unfortunately he has preferred to rely chiefly on the observations of previous writers, and to treat the subject in a discursive fashion. In more than one place he fails to draw a clear distinction between ordinary paroxysmal angina and coronary thrombosis—the one aspect of the subject where a definite advance in knowledge has been made in recent years. The statement on page 65 that angina pectoris occurs almost exclusively in highly emotional and nervously sensitive persons is contrary to the experience of most clinicians. A long chapter is devoted to pseudo-angina pectoris, but it fails to give a well-balanced picture of the condition.

Heart Disease in Infancy and Childhood.

By CHARLES HENDEE SMITH, B.S., M.D., Professor of Clinical Diseases of Children, Columbia University; and LUCY PORTER SUTTON, B.A., M.D. London: D. Appleton and Company. 1930. Pp. 259.

THIS monograph deals not only with heart disease but with rheumatic fever in general; for, as the authors point out, rheumatic carditis is by far the most important type of heart disease in children. They rightly lay stress on the fact that acute rheumatism should be regarded as a general infection involving the joints, heart, and brain in varying degrees, and not as an acute arthritis in which cardiac involvement is a secondary complication. Arthritis, chorea, and carditis may all be primary lesions, and it is wrong to regard the last merely as a sequel of one of the other two. In the chapter dealing with the systematic examination of the heart, the usual routine of considering in turn the phenomena revealed by inspection, palpation, percussion, and auscultation is abandoned. In its place the authors deal with heart size, action, sounds and murmurs, describing the various criteria which yield trustworthy information about cardiac enlargement, disorders of the cardiac mechanism, and valvular lesions respectively. Some of the more conservative clinicians will doubtless regret this innovation, but generally it will be welcomed. In cardiology the introduction of new methods of investigation necessitates a reconsideration of the relative values of different diagnostic signs. Radiography, for example, has shown that the position of the maximal cardiac impulse is generally a more reliable guide than percussion to the position of the left border of the heart, and it is time, therefore, for percussion to take second place. Two useful chapters are devoted to the electrocardiograph and X ray examination, but surely it should not be necessary to discuss here the interpretation of the normal electrocardiogram. The proper place for this is in the text-books of physiology or electrocardiography, and it should already be familiar ground to the clinician who is specialising in diseases of children. The classification of heart disease adopted by the New York Heart Association has been followed, cases being graded in accordance with the severity of their symptoms. To the same source we are chiefly indebted for the organisation of coöperating agencies which fulfil such an important function in the after-care of cardiac cases.

This monograph is the eighteenth volume of the series on Clinical Pædiatrics edited by Dr. Royal Storrs Haynes. It is apparently sold only with its immediate predecessors in the series, entitled respectively Prepubescent Syphilis and Diseases of the Skin in Infancy and Childhood, which were reviewed in THE LANCET earlier this year at 48*s*. for the three volumes.

MEDICINE AND THE LAW.

Panel Patient and Charge for Fees.

ALTHOUGH each case is based upon its own peculiar facts and possibly no two cases are alike, the decisions of the Minister of Health upon allegations of malpraxis in connexion with national health insurance medical benefit are of interest to many members of the profession. In a recent instance the following facts were established. A domestic servant pricked her thumb, which became septic. Happening to visit a friend on the following Sunday, she was persuaded that she ought to see a doctor. She thereupon went to her friend's insurance practitioner; for some reason not made clear, she did not go to the practitioner on whose panel she herself was. The doctor was at dinner when the patient and her friend arrived. He examined the thumb, put some white powder on it, and told her to come back next day and bring her medical card. She did so; he then lanced the thumb and stripped some of the skin from the pad of it. He gave her Form G.P. 26 authorising her to obtain cyanide gauze and bandages. She attended daily for a fortnight and at frequent intervals for the next few months. The thumb was again lanced two days after the first visit. Two days later the practitioner officially notified the insurance committee that the patient had been transferred to his panel. Subsequently the practitioner sent the insurance committee Form G.P. 45, giving notice that he had rendered the patient professional services and asking for approval of proposed charges to her on the footing that he had rendered such special services as entitled him to make such charge. The local medical committee and the insurance committee both agreed that the services were not such as to entitle him to charge the patient. The treatment for acute suppurative tenosynovitis (on which the claim for a fee had been based) was not, in their opinion, a service involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess. The Minister agreed and declined to refer the question to referees. The insurance committee therefore informed the patient that the service performed for her was one which came within the scope of medical benefit under the National Health Insurance Act and one for which she should not have been required to pay a fee.

Up to this point there was merely a difference of opinion as to the nature of services rendered. Later the medical practitioner contended that for the first five days of treatment the patient was his private patient. The inquiry committee found against him; the contention, they said, was inconsistent with the patient's evidence and with the use of Forms G.P. 45 and 26. The patient's employer was insured with a well-known company against Workmen's Compensation Act liabilities. The company paid the employer £25 in respect of the patient. The practitioner endeavoured to obtain payment of his fees from the company. The company declining to pay them, he then wrote a letter to the patient enclosing a detailed account of the services rendered in connexion with the injured thumb. "Excluding all those under the National Health Insurance Regulations, an inclusive fee of £30 would be very fair and reasonable, and I shall be glad of a settlement in due course." A copy of the letter was sent to the insurance company. The insurance committee decided that the practitioner "sought to obtain payment of money to which he was not entitled for treatment provided by him for the insured person concerned": the inquiry committee says this finding was amply justified. The Minister dismissed the practitioner's appeal, and the upshot of the case is that the practitioner is ordered to pay £5 5s. towards the costs of the insurance committee on the appeal, a sum of £100 is to be deducted from the remuneration payable to him, and he is formally warned that any recurrence of similar conduct would be bound to reopen the question whether his continuance upon the Medical List is in the interests of the insurance medical service. The insurance committee's attempt to remove him from the List—a serious matter for a practitioner with some 1200 patients on his panel—failed. There was no suggestion that he had neglected his patients or tried to charge fees to other insured persons on his panel. He seems to have felt that he had a claim upon the £25 which the domestic servant had received from the insurance company. This, the inquiry committee considered, had been the motive of his improper conduct. They point out, in fairness to him, that all the steps taken to obtain payment of fees were taken openly.

REPORTS AND ANALYSES

SPECIAL FINE OLD LISBON WINE (PRODUCE OF PORTUGAL).

(BARCLAY PERKINS AND CO., LTD., ANCHOR VAULTS, 5, CRUCIFIX-LANE, S.E.)

ON analysis this wine gave the following results:—

Alcohol by volume	16·6 per cent.
Equivalent to proof spirit	29·0 ,,
Total extractives	8·38 ,,
Consisting of sugar	6·5 ,,
Tannin, mineral matter and pectinous substances	1·7 ,,
Total acidity as tartaric acid	0·36 ,,

Preservatives were tested for with negative results. The wine, which is of a rich ruby colour, would appear from the analysis taken in conjunction with its palate to be a pure wine of the port type. Whilst its strength is a little below that of the usual run of ports, it may be considered a perfectly wholesome product, not tampered with or adulterated in any way. At the present time the description "Lisbon Wine" is somewhat under a cloud, as cases have been reported in the coroners' courts of wines bearing this name being prepared with methylated spirit. Such synthetic concoctions have nothing in common with the wine whose analysis appears above. The Portuguese Embassy has given an assurance that wines from Portugal are rigorously supervised and tested before being exported.

BARLEY SUGAR.

(MESSRS. BARKER AND DOBSON, LTD., EVERTON, LIVERPOOL.)

The barley sugar, which was transparent and of a dark amber colour, is conveniently packed in a glass bottle with precautions to avoid the admission of moisture, as it is decidedly hygroscopic. When analysed, the following results were obtained:—

Cane sugar	76·0 per cent.
Invert sugar	22·0 ,,
Moisture	2·0 ,,
Ash	0·05 ,,

The material had a slight but very pleasant flavour of lemon. The analysis shows that only materials of a very high degree of purity were used in the manufacture, and no confectioners' glucose is present. The obvious care taken in the making and its ease of assimilation are points much in favour of this popular sweetmeat.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 20, 1930.

SURGERY OF THE SYMPATHETIC NERVOUS SYSTEM.

OPERATIONS have been performed on the sympathetic nervous system since the latter part of last century, but it is only within the last five years that this branch of surgery has shown any signs of bearing fruit. The Surgical Section of the British Medical Association chose the subject for one of their discussions at Winnipeg, and the proceedings (reported on p. 639) merit wide consideration because they touch on disease at many points and break the artificial boundaries of modern specialism.

Earlier operations on the sympathetic nervous system were for the most part concerned with division or removal of the cervical sympathetic chain. This operation was done for such diverse maladies as epilepsy, insanity, facial palsy, exophthalmic goitre, and angina pectoris. It was easy to perform and was not attended by any noticeable ill-effects, beyond slight alterations in the upper eyelid, pupil, and face of the corresponding side. For this reason the operation had a certain popularity although the benefits derived from it were mostly not obvious enough to ensure its general adoption. There is no need now to consider the various and even fantastic hypotheses on which the operation was based, except to say that cervical sympathectomy, as designed to cut afferent nerves of the heart for relief of angina pectoris, still has a certain vogue and is attended in some cases by relief to the patient. Leaving aside the operation of periarterial sympathectomy, which, as Dr. J. F. FULTON pointed out at the Winnipeg meeting, was largely based on false anatomical and physiological premisses, the next important event in the surgery of the sympathetic nervous system was in 1923 when J. I. HUNTER and N. D. ROYLE introduced the operations of ramisection. These operations were intended to relieve spastic conditions of the limbs, for, from their experimental work, HUNTER and ROYLE had been led to believe that the sympathetic nervous system influenced the tone of voluntary muscles. Their claims aroused much controversy. Undeterred by the untimely death of HUNTER or his own ill-health Dr. ROYLE has not spared himself in advocating his operation and has performed it in many countries. The subsequent condition of the patients has been reported on independently,[1] and the original experiments have been repeated and extended. The balance of opinion appears to be that influence of the sympathetic nervous system on the tonus of voluntary muscles is unproven and that the operation is not effective in relieving spastic conditions of the limbs. At the Winnipeg meeting, however, ROYLE reaffirmed his faith in the operation and in the underlying hypothesis and in this he was supported by some Canadian and American investigators. In addition he advocated cervical ramisection for the relief of writer's cramp, atypical neuralgia of the face, and retinitis pigmentosa. Whatever the outcome of HUNTER and ROYLE's original contentions may be, the profession is, as Lord MOYNIHAN pointed out, greatly indebted to Dr. ROYLE for beginning a new era of sympathetic surgery.

In the original cases of lumbar ramisection, though attention was focused on the state of the muscles of the lower limb, it was also observed that limbs deprived of their sympathetic fibres became much warmer, and that a patient who had formerly been constipated had after operation free and frequent action of his bowels. These observations could be explained by existing physiological knowledge and it was at once perceived that they might have wide application in surgery. By removal of the greater part of the sympathetic trunk so as to divide vasoconstriction fibres, A. W. ADSON was able to improve the circulation of the lower limbs and thus to treat successfully Raynaud's disease. Later he devised an operation that proved satisfactory for Raynaud's disease of the hands. He has extended the scope of these operations and has obtained encouraging results in certain cases of thrombo-angiitis obliterans, scleroderma, and chronic arthritis in patients with cold extremities. The improvement obtained in Raynaud's disease has been so marked as to make him believe that this condition is due to excessive activity of vasoconstrictor fibres. The studies of Sir THOMAS LEWIS appear to show conclusively that this is not true, for LEWIS has been able to produce attacks of vascular spasm, resembling typical Raynaud's disease, in limbs which have been deprived of their sympathetic nervous supply by Adson's operation. Although it is probable that the operation thus does not treat the cause of Raynaud's disease, yet there is no doubt, as LEWIS himself has clearly shown, that it improves greatly the circulation in limbs affected by vascular spasm and that it has won for itself an assured position in surgery.

Following the first ramisections R. B. WADE, with the help of ROYLE, performed lumbar ramisection on cases of Hirschsprung's disease. At Winnipeg he gave a convincing report of the value of the operation in this condition, and also in some cases of chronic constipation, and his results were confirmed by J. R. LEARMONTH. LEARMONTH has opened up a new field of sympathetic surgery by dividing the sympathetic nerve-supply to the bladder in certain cases of defective micturition following myelitis of the sacral cord or other lesions which affect the parasympathetic system. Remarkable results have been obtained and it is likely that the operation will prove to have wider application in the treatment of imperfect emptying of the bladder that is of nervous origin.

[1] See, for instance, THE LANCET, July 19th, p. 127.

These operations on the sympathetic nervous system are anatomical dissections of parts of the body which are not affected by disease, and they can be easily performed by any surgeon who has a proper knowledge of anatomy. But no justice can be done either to the patient or to the subject unless the surgeon devotes himself also to the physiological side of his cases. As Dr. W. J. MAYO suggested in his opening address at Winnipeg, there will be great opportunities not only of extending the science of surgery but also of making important contributions to human physiology. The earlier surgery of the sympathetic nervous system failed because it was based on imaginative thinking rather than on accurate studies, of which the work of LEWIS may be cited as a model. If the complexities of the subject are not ignored we may indeed be approaching what Lord MOYNIHAN termed an era of physiological repair.

THE FUTURE OF CONTRACT PRACTICE.

Dr. GRAHAM LITTLE'S address to the Paddington Medical Society last week has had a good press, and was in fact more piquant than the précis on which newspaper comment was based. He thought it probable that a system of medical service under State control would be pressed upon the nation by the Government in the near future, and that the medical profession would have to face a crisis as grave as that of 1912 when the National Insurance Act took form. Dr. LITTLE himself has small use for contract practice of any kind, which he regards as unsatisfactory to the patient because it means the introduction of a third party whose first consideration is seldom the patient himself; and unsatisfactory to the doctor because his work becomes stereotyped in the keeping of books and collection of statistics. In addition there is the drawback inherent in the panel system that it induces the patient to have recourse to his doctor unnecessarily. Dr. LITTLE thinks that all this has lowered the prestige of the profession, but, it may fairly be argued that insured persons are visiting their panel doctor more frequently because they value his services more, not less. The unnecessary visits, as the *Manchester Guardian* suggests, may be a sign that the working classes are gradually losing that terrible fatalism about disease which has so often led them to wait until the doctor is undoubtedly required, and therefore often too late. A preventive visit now may dispense with the need for nine curative visits later on. The facts to which the Government Actuary has been calling our attention are possibly the first indication of the principle of preventive medicine getting into national insurance practice.

The first intention of the Act of 1911, as stated in its title, was to provide for insurance against loss of health and for the prevention of sickness. The cure of sickness came second, and insofar as medical benefit deals only with established illness the intention of the legislature has proved futile. The workers themselves are taking cognisance of this difference between intention and realisation. At the recent Trades Union Congress in Nottingham, Mr. ERNEST BEVIN, speaking for the Transport and General Workers, described the result of the panel system as a tragedy of incompetence. The medical service we get to-day, he said, is not in line with the developments of modern discoveries in the medical world. Mr. BEVIN went on to remark that any medical service that does not provide for adequate diagnosis as its first principle is not achieving its object, and he ended with an appeal to the medical profession to join with Parliament and the Government departments chiefly concerned in bringing their combined experience and knowledge to provide a well-organised, well-developed, well-trained, and (he was prepared to say) well-paid medical service to protect the health of the people. He invited the British Medical Association to sit down with the trade-unions and hammer out the basis of such a service; and the Association has, in fact, just issued, in the form of a sixpenny 48-page booklet, its proposals for such a general medical service for the nation, with an invitation to public bodies to comment upon and criticise them. A fundamental principle of this scheme is a provision of diagnostic aids, available for every individual patient.

It is hardly to be doubted that any such general service will be in large part on a basis of contract. Contract practice has come to stay; it has always arisen at a certain stage of social development, and it was not the principle that was new in 1912 but the introduction of a central umpire into a system which up till then had been administered, for better or for worse, by little groups up and down the country. What the conditions of contract practice were 35 years ago may be read in a series of articles, entitled "The Battle of the Clubs," written on first-hand information by a special commissioner of THE LANCET, and published in 1895–96:—

> "Some of these clubs," he wrote, "are uncommonly ill-managed, in that all persons, no matter what their condition of health or their means, are invited to enroll themselves, that they may be treated medically for a penny or two a week, drugs included. In certain of these institutions the management of the association having been, and remaining, entirely in lay hands, the interests of the medical officer suffer severely. These gentlemen are treated badly by the persons to whom they dispense charity. Their emolument is very small, and their work is very hard. The patients who might reasonably be expected to pay them as private clients are not ashamed to join the charitable associations—charitable to all save the medical man—and may even want to have their wives, children, immediate relations, and occasionally the stranger within their gates, all treated in return for one payment."

It was not the principle of contract practice such as this that was brought in by the Act of 1911, but rather the opportunities of collective consultation (called rather provocatively collective bargaining) which have increased the status of the contracting doctor and raised the average quality of the treatment given to an extent which is only overlooked by those who have short memories or who are politically biased. Mr. E. B. TURNER,

who is admittedly not enamoured of contract practice, told the meeting at Paddington that, in his opinion, the National Insurance Act had been working well for all parties in rural districts, although in towns and urban areas its success was less evident.

Any further extension of contract practice need not, however, necessarily be on a compulsory basis. In London, for instance, there has been growing up a voluntary contract system, run by doctors for doctors, which is described as combining the advantages of the national scheme without its disadvantages. For a capitation fee of threepence per week, paid in full to the doctor, the subscriber becomes entitled to medical and surgical treatment within the competence and skill of a general practitioner at the surgery or at his house, including all needful medicines. The scheme is growing steadily in London, where there are now 11,255 subscribers, a large proportion of them being in the Paddington and Kensington areas; and there are 30 or more such services now running in different parts of the country. The experience of those actually engaged in these services will be an important element in any contemplated change in the near future. A Labour Government, acting on the advice of its medical advisory committee, may come to some decision which will alter the whole practice of medicine in these islands; but history suggests that adjustments of this kind come gradually by common consent. The large majority of practitioners are party to a decision that the time is now ripe for the inclusion of dependents of insured persons under the national scheme. If there are alternatives which are working well in practice, they should be considered before any action is taken. Paddington is happy in having a forum for practitioners of all shades of medico-political complexion where an endeavour is being made to work out some agreed basis of procedure. The need is great for similar action in other areas.

THE BACTERIOPHAGE AND THE TREATMENT OF CHOLERA.

THE most interesting property of the bacteriophage, from the point of view of practical medicine, is its effect in the living body. It may be recalled that the bacteriophage is a principle which brings about the solution of bacteria and under favourable conditions their more or less complete destruction (the Twort-d'Herelle phenomenon). The nature of this "principle" has been ardently debated. If it is not a living entity, in our ordinary understanding of the word, its characters so closely resemble those of living organisms that in the absence of contrary proof the definition may be allowed to stand. The affected bacteria seem to become diseased; their osmotic tension increases; they swell, burst, and disintegrate. In the resulting solution the lytic principle—the bacteriophage—is present in an increased amount. The general phenomenon is nowadays a commonplace in the test-tube, and most of D'HERELLE'S contentions concerning its characteristics in this environment have been shown to be substantially correct. But in respect of its occurrence and effect in the living body very diverse opinions have been held. D'HERELLE has never ceased to teach that bacteriolysis takes place in vivo exactly as in vitro, and that it alone causes recovery from certain diseases. Nay, more, he is convinced that epidemics are controlled by this same factor. In his opinion a patient's recovery is brought about by intracorporeal genesis of a bacteriophage capable of destroying the organisms, whilst the cessation of an epidemic is due to the spread of this bacteriophage among the exposed population. This theory of infection and immunity, which is peculiarly D'HERELLE'S, has been applied by its author mainly to intestinal infections, since the bacteriophage is normally an inhabitant of the bowel; but it has also been extended to include other infections, such as those due to the staphylococcus and the hæmorrhagic septicæmias (plague and barbone of the buffalo). In the hands of D'HERELLE and certain others bacteriophage therapy has yielded very valuable results. On the other hand, many investigators—and probably a majority—report that it has had no influence of any significance, either experimentally or in practice.

It might well be argued that if one disease is more suitable than another for testing the efficacy of this treatment it is cholera. Here we have an acute infection in which the germ does not pass beyond the intestinal walls, and the conditions are, therefore, favourable to the working of specific antibacterial agents in the lumen of the gut. Moreover, the organism is relatively delicate and particularly apt for bacteriolysis, as was shown long ago by the classical studies of METCHNIKOFF and PFEIFFER, and others. We therefore turn with great interest to the reports of an investigation of the action of the bacteriophage in cholera which has been carried out by D'HERELLE, with the assistance of R. H. MALONE and M. N. LAHIRI. The work was done at the instance of the Government of India, and was financed by the Indian Research Fund Association. The results obtained, which constitute the most serious contribution to the literature of the subject which has yet appeared, have now been published in a special memoir.[1] This is divided into three parts, one of which deals with the bacteriology and bacteriophagy of cholera, one with the phenomena of recovery and the results of treatment, and the third with epidemiology and prophylaxis. The authors find that D'HERELLE'S claims for the efficacy of the lytic principle in the body are very fully confirmed. In the first instance they studied 23 cases of cholera which were treated at the Campbell Hospital, Calcutta, by the approved current method—that of Sir LEONARD ROGERS. Seven of the patients died. No specific bacteriophage therapy was attempted, and the observations were simply confined to examination of the dejecta for

[1] Indian Medical Research Memoirs, No. 14. By F. d'Herelle, M.D., Professor of Protobiology, Yale University; Major R. H. Malone, M.D., I.M.S.; and M. N. Lahiri, M.B. 1930.

vibrios and bacteriophages in order to demonstrate what was the normal mechanism of recovery. It was found that recovery was regularly associated with the appearance of a specific bacteriophage of high activity in the stools, whereas in fatal cases the bacteriophage was absent or showed little activity. "In all patients in whom the virulence of the bacteriophage (for the vibrio) is exalted and reaches a sufficiently high degree . . . recovery is the rule. The duration of the disease depends on the rapidity of the exaltation of the bacteriophage and the degree of virulence attained." Holding this view of the mechanism of recovery the authors of the memoir deny the intervention of humoral immunity as usually taught in any form. For them such serological signs of immunity as may accompany recovery are epiphenomena and have little or no causal relation to the fact of recovery.

From these observations the investigators proceeded to the direct examination of the effect of the bacteriophage in treatment. The patients were treated in their own homes and were to some extent selected, since they were all persons who had consented that the method should be used exclusive of all others. D'HERELLE argues that such selection is, if anything, inimical to good results, since only those in desperate case will agree to be the subjects of experiment; but of course the opposite is arguable too. Other cases in the same village, treated only by prevalent methods of oral medication, served as controls. The bacteriophage treatment, which was carried out by MALONE, consisted of an initial dose of 2·0 c.cm. of bacteriophage preparation in 10 c.cm. of water, followed by repeated administration of a similar preparation during the next three hours. When necessary the same procedure was carried out on the following day. Almost all the cases (198 in number) were derived from nine relatively small outbreaks in Punjab villages of from 450 to 3000 inhabitants. The results may be summarised as

Total cases				198			
Treated with phage			74	Not treated with phage			124
Died			6	Died			78

This gives a death-rate of 63 per cent. in the untreated cases, which is about the normal death-rate from this disease, as against one of approximately 8 per cent. in those who received the specific treatment. A further analysis of the figures, with reference to the time of commencement of the specific treatment, gives results yet more favourable to the bacteriophage, in cases in which the treatment was commenced early. We note the curious fact which may have much significance, that where the bacteriophage was given subcutaneously as well as by mouth, the results were nothing like so good as when it was given by mouth alone.

We have several times had occasion to criticise reports on the use of the bacteriophage in therapeutics, and to throw doubt on their statistical value. The present figures are very striking and we have no complaint to make of their presentation; but it is regrettable that an even larger number of cases were not submitted to treatment before any final conclusions were drawn. It is not made clear whether the experiment was carried out in the season of greatest incidence of the disease—although this seems to be so from the epidemiological studies of RUSSELL and SUNDARARAJAN [2]—or in a period of lesser activity; nor are we able to judge how long the epidemics had been going on before treatment was started. These factors are of prime importance in assessing the value of the method. We also have in our hands a paper by L. SOUCHARD,[3] who, following D'HERELLE'S technique, treated 27 cases of cholera in Cochin China with far less fortunate results, in that only three of the patients survived. These circumstances make it all the more unfortunate that in a country where 40,000 deaths from cholera may be registered in a month in a single province [2] the total number of cases treated in what should be a vital inquiry did not exceed 74, while this essential part of the investigation only lasted six weeks.

On epidemiology and prophylaxis the views expressed by D'HERELLE and his colleagues are as heterodox as those already quoted. They believe, as we have said, that the epidemic is controlled and terminated by the agency of the bacteriophage. In nature this is brought about mainly by pollution of the water-supply by excreta of convalescents who harbour non-virulent vibrios which are similar to the variant types which may be produced in the test-tube by bacteriophagic action. Such vibrios are associated with a bacteriophage which preys upon them and is similarly potent for the virulent *V. choleræ*. In India fæcal pollution of wells is a normal event, so that such a bacteriophage is readily disseminated. When this happens, it is maintained, the epidemic ends. So certain are the authors that this is the mechanism of recovery and immunity that they say that the vibrios recovered from convalescent carriers are always avirulent and associated with a bacteriophage, so that "it is enough to introduce a carrier into a community of susceptible individuals for the community to become entirely resistant." This is not merely heterodox; it is revolutionary. We may recall from the work of others, which may have some bearing upon the virulence of vibrios in carriers, that the fact that the severity of the cases declines as the epidemic progresses is well attested, whilst the special prevalence of non-agglutinating vibrios in epidemics has been repeatedly observed. D'HERELLE'S contention means that the disease is only transmitted by the incubating, early, or fatal case, and that in the absence of these there can be no cholera. A patient, according to this thesis, is only infectious until bacteriophagy takes place in his gut; he then recovers, becomes non-infectious, and a disseminator of a beneficent bacteriophage. The position of the variant and inagglutinable strains of vibrios is, of course, an old problem, and while D'HERELLE'S theory gives an entirely plausible explanation of their occurrence and their significance in convalescents, it must be remembered that the appearance

[2] Indian Medical Research Memoirs. No. 12. By Lieut.-Col. A. J. M. Russell and E. R. Sundararajan. 1928.
[3] Ann. de l'Inst. Pasteur, Feb., 1930, p. 126.

of a bacteriophage in recovery and its absence in fatal cases does not prove the causal relationship which he assumes. Evidence of this relationship may be supplied by the results of treatment, but it would also be useful to inquire into the relationship of the variant inagglutinable vibrios of low virulence, which are said to result from bacteriophage action, to the variants produced in bacteria by other environmental alterations such as the action of immune sera.

The report of D'HERELLE and his colleagues is bound to arouse intense interest, not only because cholera is an urgent problem, but chiefly because of its fundamental bearing on the problems of immunity and epidemiology. The pronouncements of the authors will be criticised as dogmatic for they show an airy disregard of work that conflicts with their own views. If their claims are confirmed a great and fundamental advance will have been made in the control of epidemic disease; but in making these claims they have undertaken a heavy responsibility.

ANNOTATIONS

THE BOARD OF CONTROL AND THE MENTAL TREATMENT ACT.

THE early mental case will always be a perplexing problem to the general practitioner and to the local authorities; there can be little doubt that it is to the public interest that much better facilities for early treatment should be provided than exist at present. Unfortunately this provision is costly and great care must be exercised in selecting cases likely to benefit. The Mental Treatment Act of 1930, the major part of which comes into force on the first day of 1931, permits a variety of means. Local authorities may establish admission hospitals on the basis of the Maudsley Hospital in London or they may contract with a general hospital for special pavilions. It is to be hoped that in future the mental wards in the old poor-law institutions will no longer be used for temporary treatment and observation of all cases indiscriminately. The school mistress with melancholia, the degraded alcoholic, the court case on remand, the senile dement—these should never be nursed in the same observation ward, as too often happens at present. The problem is admittedly difficult but the new Act makes its solution more possible. It is natural that the report of the Board of Control, which we summarise on another page, should open with a reference to this Act, since that measure has gone so far towards consolidating the ideals which the Board have at heart. They believe that the Act is epoch-making for several reasons. It is an encouraging sign of convergence between medical and lay opinion in matters connected with mental disorder. Voluntary patients who for long could be received in registered hospitals and licensed houses may in the future be received in our public mental hospitals; temporary patients may also be received for treatment without certification, so that the mental hospital will approximate much more closely than heretofore to the general hospital. The admission of these early cases, however, must be contingent upon the provision made by local authorities; the Board have no power to force an authority to provide accommodation, they can only criticise this accommodation in the interest of the patients. The impetus for better treatment and better building must, in the future as in the past, come from local public opinion. Another welcome feature in the Act is the ability to approve accommodation for mental patients in general hospitals, thus removing compartments which have so long been almost watertight. The Board attach great importance to the local survey of requirements which the Act enjoins, expressing their hope that the survey will envisage the mental health of the community as a whole and the needs of the future. If the Board have their way it will become possible for medical officers of mental hospitals to staff the new out-patient clinics recognised by the Act and for a skilled psychiatrist to be appointed as an after-care officer, at least in larger areas. Not the least important provision of the Act empowers local authorities to undertake or support research work which has hitherto been gravely restricted by their lack of power to make staff appointments. Hitherto it has been inadmissible for several mental hospitals to establish and maintain a central laboratory; the near future may see group laboratories linked up with universities or medical schools in a chain of research throughout the country.

AN ENGLISH HEALTH FILM.

Leyton Borough Council are responsible for the production of a propaganda film which was shown with success at the local picture houses during Health Week. The staging and preparation of the film has been the work of Dr. J. E. Cheesman, who has the unusual theory that a health film should deal with health rather than disease. Under the title "Better Health," the film is intended to appeal to all those who are interested in children and their welfare. In spite of the exigencies of the English climate the photography is good, and attention is captured at the outset by a few scenes from prehistoric life borrowed from the American production of "The Lost World"; absurd monsters are seen rooting in the primeval mud, and man—a healthy-looking savage—holds his own against disaster by his superior intelligence. The moral is stressed by a glance at a modern bacteriologist at work in his laboratory, and the scene passes on to school medical inspections, children at play, open-air classes, dental inspections, and a realistic representation of a dental extraction under gas on an expectant mother. At one point a company of children are seen under the spray bath, and at another the use of the fountain drinking tap—for which no cup is necessary—is demonstrated; a healthy disregard for nudity is exhibited by all the children photographed, who take their sunbathing as a matter of course. Boys at carpentry and girls at the wash-tub show an interest in their tasks, and the film closes with some hundreds of healthy children massed and cheering. The difficulty always encountered in this form of film work is to make the subject matter at once instructive and palatable to the public. Most patrons of the cinema have a natural resentment against education disguised as entertainment, and since cinema proprietors must supply the demand with which they are faced it is not easy to make a propaganda film which will pay its expenses on the

road, while the initial outlay must always be considerable. The Leyton film, Dr. Cheesman tells us, has satisfied nearly everybody; it was accepted by three film proprietors in Leyton during Health Week, and has been let out to other authorities since. Alterations and improvements can be made at any time when necessary, and it remains the property of the Council for use whenever required. We have also seen an American film of a similar type, entitled "A Day at Merrill Palmer School," which shows the routine in a nursery school. While the photography is even better than that of the English film, it suffers from interruption by excessive captions, and the interest is not so well sustained. One is struck by the large number of helpers who appear to be available, and who sometimes are present in the proportion of one helper to three children—a state of affairs which it is hard to imagine we shall ever rival in this country.

PROBLEMS OF BIRTH CONTROL.

THE seventh international Birth Control Congress was held at Zürich from Sept. 1st–5th. Though it was attended by representatives of eight different countries, the main contribution was made by speakers from Great Britain, the United States, and Germany. In Germany birth control is a political issue. It is opposed by conservatives and nationalists for several reasons of which, according to Dr. K. Soloweetshik (Leipzig), not the least important is "the resentment aroused in government and medical circles by the unfavourable attitude of the rest of the world towards Germany." In the minds of socialists, however, birth control is an essential part of a wider movement aspiring towards political and moral emancipation. It is carried forward on an emotional wave which also sustains the issues of free-love and abortion. Much fervour was expended by German speakers upon this last subject. One of them, Dr. W. Pust, stated that between 1900 and 1930 Germany lost five times as many lives through the practice of abortion as she lost in the late war; that the number of abortions induced annually was greater than the number of living births; and that it was unusual for a German married woman not to have had an abortion at least once in her lifetime. By many German speakers it was vehemently contended that a modification of the German penal code in regard to abortion would be followed by an amelioration in maternal health comparable to what was reported by Dr. Martha Ruben-Wolf to have taken place in Soviet Russia.

Two obstacles to the progress of birth control in Germany were described. The first was a paragraph of the "doctor's oath" in which the individual doctor is exhorted "to refrain from all things tending to reduce the population or strength of the people." The second is a clause included in the new draft of the penal code of the German Reich that: "the public recommendation of articles to be used for immoral purposes renders the offender liable to not more than two years' imprisonment." Hence the birth control movement in Germany is at an earlier stage than in this country. It is still, largely, in the crusading stage, and it has not yet become detached and self-critical.

As regards contraceptive methods and technique, several points of interest arose, and we will comment on two of them. In the first place the increasing experience of different investigators of the Gräfenberg ring is tending to weaken rather than strengthen confidence in the suitability of this method for any but carefully selected cases. In a paper devoted to his own method, Dr. Gräfenberg stated that he had now fitted 1331 patients with his various intra-uterine appliances. With the silk stars and rings, now abandoned, he had had 3·1 per cent. of failures; with the silver ring he had had 1·6 per cent. But his figures were not presented in anything approaching the detail that the conference would have liked. Dr. J. H. Leunbach (Denmark) reported having fitted the ring in 176 cases. From 23 of these it had subsequently to be removed, and from 22 it came out by itself. Four women lost the ring without knowing it; one woman became pregnant despite the presence of a ring which fitted well. In a much smaller series (15) Dr. Helena Wright (London) reported several unanticipated sequelæ, but the reports of Dr. Norman Haire (London, 270 cases) and Dr. Norbert Neufeld (Breslau, 30 cases) were more favourable. The general opinion of the conference seemed to be that the method best adapted to the requirements and capacity of the majority of women is a combination of a vaginal pessary—the Ramses and the Mensinga being the most favoured—and a spermicide. As regards the optimal size of pessary for average women—about which there has lately been correspondence in our columns—the statistical experience of the birth control clinics of the United Kingdom and United States is unambiguous. It is to the effect that large sizes are fitted in preference to small. Thus, at 26 American clinics through which had passed 36,804 women, the average sizes of pessary fitted were Nos. 70, 75, and 80. At 16 British clinics that had dealt with 45,321 women, the average sizes were 70, 72½, and 75. Of the 42 clinics whose records of sizes were submitted to the conference, the Cromer-street Clinic, in London, and the American clinic at Reading, Pennsylvania, fit the smallest sizes. The average sizes here used are 10–15 mm. smaller than the average for all the clinics.

DEATHS UNDER SPINAL ANÆSTHESIA.

THE statistics of anæsthetic fatalities are notoriously unsatisfactory. The data on which conclusions are based are at once insufficient, numerous, and variable. The cases never afford really fair comparison between the various methods and drugs, for either the patient or the operator or the operation is always different. These facts are well demonstrated in a paper[1] on spinal anæsthesia fatalities which contains a number of interesting and instructive instances of deaths associated with this form of anæsthesia. In the vast majority of the cases cited the facts recorded are so meagre that it is quite impossible to form any valuable surmise about the real cause of death. In some instances spinal anæsthesia was used for operations not usually held to be well adapted to that method. Amputations of the breast, for example, provide one or two of those quoted, and another perhaps more notable instance is that of a boy of 9 years who underwent tonsillectomy under spinal anæsthesia. He was given 150 mg. of neocaine dissolved in 6 c.cm. cerebro-spinal fluid, the injection being made between the second and third lumbar vertebræ. Satisfactory anæsthesia of the entire body resulted, the operation was satisfactorily performed, and the boy returned to bed. About ten minutes later he was put in the sitting position to facilitate expectoration of blood. After about two minutes respiration ceased and resuscitation efforts failed. Here it appears that the fatality will be attributed to the faulty position instituted by

[1] Amer. Jour. Surg., August, 1930, p. 234.

the nurse on a patient still affected by the spinal injection. The authors of the paper, H. Koster and M. Weintrob, have done valuable work in spinal methods, and there is much truth in what they say about the fallacies of statistics tending to show the superior safety of inhalation anæsthesia. We entirely agree with their remark that "the value of any statistical study (regarding anæsthetics) depends less upon the tabulated figures than upon the thoroughness with which all the modifying factors are set forth and discussed." They make no attempt to explain the mechanism of death in those rare cases, some of which are cited, in which a healthy person receiving only a usual dose or merely a spinal puncture dies suddenly. They are to be compared, we suppose, with similar instances in the history of inhalation anæsthesia in which little or even none at all of the anæsthetic has been inhaled when death occurred.

AUTOPATHOGRAPHY.

THE word "autopathography," according to Dorland's Medical Dictionary, connotes a written description of one's own disease. The death of Dr. Leonard Mark has drawn attention to his account of his own sufferings from acromegaly. It is not easy to see how, apart from his skill as a trained observer, the account would add to our knowledge, but his experience probably added to his understanding of the sufferings of other victims of the same disease and the episode prompts inquiry how far subjective experience of pain or illness is helpful or necessary to the physician. To some degree such experience is universal, and a patient's physical pain or discomfort belongs to a world with which we are all familiar. It is difficult, indeed, to conceive that pain in others could be understood by one so constituted as to be incapable of feeling such pain himself; but when we come to the world of mental symptoms we find the conception necessary, for there are not only degrees but qualities of mental pain to which most of us are strangers. A vigorous movement in America and this country towards the advancement of mental hygiene received its stimulus from the experience, as an asylum inmate, of Clifford W. Beers, who after recovery brought to the movement the lessons derived not only from his physical but his mental sufferings during the illness. It is plain from his account that none but an experienced psychiatrist could have realised the quality, or even the existence, of his mental distress, and we can understand why the lack of such realisation in bygone days was associated with harsh treatment of the insane. When, however, we turn to the minor psychoses we find that lack of training has left each of us free, either to despise the neurotic patient as a more or less wilful nuisance, to regard him as in need of nothing more than cajolery or encouragement, or to study him objectively as a problem in which sequences of cause and effect are of scientific and practical interest. Evidence of these reactions can be seen at times in our own columns, and the neurotic patient himself quickly becomes a shrewd judge of the temperamental qualities of his physician. Jung believes that each temperamental type has its own "Weltanschauung," and that only the people whose outlook upon the world is similar can really understand one another. The cheerful and easily adjusted extrovert physician will fail to make contact with the doubting and overscrupulous introvert, and it is an observed fact that some physicians never hear of symptoms that are freely poured into the ears of their temperamental opposites. The symptoms of some of the minor psychoses are so irrational that, in the absence of previous instruction or subjective experience, only close acquaintance with the patient will convince the observer of their importance. Even then it will depend upon his own temperament how much he profits by the experience; he may learn to seek for similar phenomena in other patients or still regard them as curiosities.

Dr. Mark's story could be read with understanding by all medical men and women. An intimate account of neurotic sufferings would be incredible nonsense to some, some would understand it by their subjective experience of lesser troubles of the same quality, but few could appraise it and put it in perspective with the whole subject of the minor psychoses. Thus our understanding of some patients is affected by differences of temperament and inner experience that scarcely touch our attitude to physical suffering. Insanity has been lifted into the objective plane and temperamental differences in medical observers have little influence; improved instruction is tending towards a similar objectification of minor mental disorders, and we look forward to the time when affective reactions will have no influence upon the handling of the neurotic patient.

PUBERTY AND MATURITY.

MANY of the obscurities of sex and of the nomenclature of familiar sexual processes have been cleared up in recent years. The presidential address of Prof. F. A. E. Crew to the Second International Congress for Sex Research, which was held in London from August 3rd–9th, helps a good deal to clarify ideas about the onset of sexual activity, especially in the female. He makes it clear that "puberty" and "maturity" are not the same thing; in any exact analysis they must be distinguished. Puberty is the stage in individual development characterised by the ability to produce functional gametes, and by the desire and capacity to play the appropriate rôle in sexual congress; maturity is the stage characterised by the exhibition of the maximum fertility ratio, in the female by the ability to produce viable offspring and to rear them. Puberty, in short, equips the individual for fruitful mating, maturity for efficient reproduction. It is obvious that human material must necessarily be very unsatisfactory for the exact analysis of these subjects. Prof. Crew as a geneticist is particularly interested in the hereditary factors, and, as he points out, mankind is everywhere so genetically mixed that really pure stocks are not available for the examination of such a simple point as the age at which menstruation begins. A great many data have been collected on the subject; it seems clear on the one hand that environmental conditions of climate and so on have a definite effect, and on the other that the inborn constitution of the individual also has an influence. Thus Bolk, in Holland, found that the average age of the onset of menstruation was about ten months earlier in those whom he classed as blondes by their eye colour than in brunettes. For the investigation of maturity, human material is plainly useless. Prof. Crew, therefore, has undertaken precise observations on colonies of mice kept under controlled environmental condition in his department in Edinburgh, and they bring out very clearly some of the points which he wants to emphasise. In 100 female mice the first œstrus —i.e., puberty—occurred at various times between the twenty-eighth and seventy-sixth days of life. In 20 of the animals it was not followed by mating, and among the 80 in which mating occurred pregnancy

followed in only 24. Of these, seven died and four ate their young soon after birth. In the same mice when they were six months old pregnancy followed 80 to 90 per cent. of matings, and successful pregnancies and rearings were the rule. Pregnancy, therefore, is not only relatively rare when mating occurs immediately on the achievement of puberty, but it is also relatively dangerous. Turning next to the problem whether these events are controlled by genetic factors, Prof. Crew separates the mice into two inbred stocks, one white the other coloured, each of which may be assumed to be approximately pure genetically. In two successive periods of observation he found that puberty arrived earlier in the albinos than in the coloured, the best experiment giving a mean of 39 days for the albinos and 52 days for the coloured. Since œstrus recurs regularly once it has begun, and since the imperfections of pregnancies following the first œstrus are the same whether that occurs early or late, it follows that early and late sexual maturity are constitutional characters, and a preliminary analysis suggests that earliness is dominant to lateness.

The transition from puberty to maturity may then be expressed as the series (1) œstrus without mating, (2) mating without pregnancy, (3) pregnancy without viable offspring, and it seems likely that the successive steps ultimately depend on the development of the full functional activity of the pituitary. There are hardly any data which enable us to judge whether the mouse results may be transferred to man; general experience certainly suggests that they may, and it is at any rate known that very youthful pregnancies are associated with an excessive maternal mortality in both species.

THE ALKALOIDS OF ERGOT.

AN important paper, shedding new light on the alkaloids of ergot, has recently been published by S. Smith and G. M. Timmis.[1] In 1906, G. Barger and F. H. Carr isolated an amorphous but highly active alkaloid, ergotoxine, which was generally believed to be the specific alkaloid of ergot until 1921, when K. Stoll isolated a crystalline substance of slightly different composition which he called ergotamine. Since both of these substances had the same physiological properties, it was believed by some that ergotamine, being crystalline, was the true active principle, but the relation between them has hitherto been very mysterious, more particularly because other workers failed to obtain ergotamine. This failure was explained by Stoll as due to insufficiently protective methods of extraction. Smith and Timmis have now obtained crystalline ergotoxine, crystalline ergotamine, and also the inactive substances ergotinine and ergotaminine in crystalline form, and find all four to be pure and different. While ergotamine readily crystallises from many different solvents, ergotoxine only crystallises from one or two, benzene and its simple homologues and carbon bisulphide. More interesting is the fact that when Smith and Timmis apply either Stoll's own process or Kraft's process to the official ergot of rye, no matter what its country of origin, they always get ergotoxine. But it occurred to them that ergot grows on other grasses besides rye, and they find that when they extract the unofficial ergot of New Zealand tall fescue (festuca) by Kraft's process, they get ergotamine. These results suggest that the method of extraction has little to do with the alkaloid obtained, and that the variety of the ergot has everything.

[1] Jour. Chem. Soc., 1930, clxxx., 1390.

Hence ergotoxine and ergotamine are to be regarded as the active principles of two different kinds of ergot, different in the same way as the official *Strophanthus kombé* is different from the unofficial *S. emini*. Ergotoxine appears to be the true active principle of the official ergot of rye, while ergotamine comes from unofficial ergots.

"GENEVA PLACES."

IT will be remembered that the French delegation to the Naval Conference last spring put forward proposals for "humanising" submarine warfare. Those who retain any interest in such regulation of the game of war will find further food for thought in a paper[1] in which Dr. G. E. de Metz makes some suggestions for the preservation of non-combatants. Dr. de Metz is much impressed by the increasing risks they run from aerial and gas warfare. He therefore advocates the establishment and organisation in peace-time of neutral zones in each country, into which certain classes of non-combatants could be withdrawn in the event of war. He proposes that these areas should be called "lieux de Genève," and that pregnant women, mothers with young children, the aged, cripples, and the sick and wounded should be provided with special non-combatant certificates by the medical authorities, and concentrated in such sanctuaries, which would be neutralised by previous agreements between the belligerents. Each zone would be under the control of a neutral whose duty it would be to see that his area was not used for military purposes, and to prevent persons not furnished with non-combatant cards from using the area. The "sanction" against abuse of any zone would be its declassification as a neutral zone, and the "sanction" against its attack by the enemy would be reprisals against a similar "Geneva place" in the enemy's territory. Dr. de Metz thinks that public opinion may come to demand a gradual extension of the protection afforded by such places to larger and larger classes of non-combatants until the wheel turns full circle, and we may revert to the mediæval conception of war as a matter for professional soldiers or champions only. This is a pleasant change from the realist view of international struggles, and we look forward to the time when a soldier will have to produce his "combatant's card" before being allowed to proceed to the deserted area which has been allotted for the battle.

Dr. W. Norwood East has been appointed one of His Majesty's Commissioner's of Prisons and a Director of Convict Prisons.

THE annual general meeting of the Medical Defence Union will be held at 49, Bedford-square, London, on Thursday, October 2nd, at 4.30 P.M.

[1] Presse Méd., July 26th, p. 1021.

DONATIONS AND BEQUESTS.—Mr. T. W. G. Hewitt, of Weelsby Hall, near Grimsby, left, among other bequests, £20,800 to the Grimsby and District Hospital, including £20,000 for the endowment fund.

Sir William Morris, who has already given £90,000 for the purchase of the Radcliffe observatory site on which additional hospital buildings will be erected in connexion with the Radcliffe Infirmary, has completed the purchase price by an additional gift of £10,000. Sir William Morris's gifts to the infirmary, of which he is president, amount to £150,000.

OPENING OF THE MEDICAL SCHOOLS.

In connexion with the opening of the session at the London Medical Schools, the following arrangements are announced :—

Charing Cross Hospital.—Dr. J. M. H. MacLeod will distribute the prizes on Saturday, Oct. 4th, following tea at 4.30 P.M. The dinner of past and present students will take place on the same day at the Royal Adelaide Gallery Restaurant (Gatti's), opposite the Hospital, at 7.30 for 8 P.M., with Mr. E. B. Waggett in the chair. A special post-graduate course will be held on Oct. 4th and 5th.

Guy's Hospital.—The winter session will begin on Sept. 30th, and the opening address will be given on Tuesday, Oct. 7th, at 3 P.M., in the Physiological Theatre of the Medical School by Lord Moynihan.

King's College Hospital.—This school has now completed a hundred years' work, and an account of this will be given by Dr. Raymond Crawfurd, on Oct. 1st, at the opening ceremony of the winter session, when Dr. G. F. Still will take the chair at 2.15 P.M. The centenary dinner, at which Sir StClair Thomson will preside, will be held at 7 P.M. for 7.30 P.M. on the same evening at the Connaught Rooms, Great Queen-street, W.C.

London Hospital.—The old students' dinner will be held at the Trocadero Restaurant, Shaftesbury-avenue, W., on Thursday, Oct. 16th, at 7.30 P.M. for 8 P.M., with Sir Wilfred Grenfell in the chair. A post-graduate course, like the one arranged last year, will be held at the hospital from Oct. 15th to 18th inclusive.

Middlesex Hospital.—The opening ceremony of the winter session will take place at the Queen's Hall, Langham-place, on Oct. 1st at 3 P.M. Mr. Arthur Greenwood, Minister of Health, will distribute the prizes, and Mr. Eric Pearce Gould will give the introductory address. The annual dinner of past and present students will be held at the Savoy Hotel at 7.30 P.M. on the same day.

Royal Free Hospital.—The inaugural address and prize-giving will be held on Oct. 1st at 3 P.M. The address will be by Miss Maud Chadburn, senior surgeon to the South London Hospital.

St. Bartholomew's Hospital.—The old students' annual dinner will be held in the Great Hall of the Hospital at 7 P.M. on Oct. 1st, with Mr. L. Bathe Rawling in the chair.

St. George's Hospital.—On Oct. 1st, at 3 P.M., Lord Riddell will give an inaugural address at the annual prize distribution in the Board Room. Dr. James Collier will take the chair at a dinner, to be held at 7.15 P.M. for 7.45 P.M., on the same day at the Hyde Park Hotel, Knightsbridge.

St. Mary's Hospital.—The annual dinner of past and present students will be held at the Trocadero Restaurant, at 7 P.M., on Friday, Oct. 3rd. Dr. Reginald Fuller will take the chair. A special post-graduate course will be held from Oct. 3rd to 5th in the Library of the Medical School, beginning at 10.15 A.M. each day, and open to all medical practitioners without fee.

St. Thomas's Hospital.—Dr. R. Muzio Williams will preside at the annual dinner of old students to be held at St. Thomas's House, at 7.30 P.M. for 8 P.M., on Oct. 3rd.

University College Hospital.—The winter session will begin on Oct. 1st. The annual dinner of past and present students will be held at the Hotel Victoria, Northumberland-avenue, W.C., on Friday, Oct. 17th, at 7 P.M. for 7.30 P.M.

Westminster Hospital.—The annual dinner of past and present students will take place at Grosvenor House, Park-lane, W., at 7.30 P.M., on Oct. 1st. Dr. S. E. Dore will preside. Winter session commences Oct. 1st. An inaugural address on "The Medical School, the University, and the State" will be given in the Board Room at the Hospital at 3 P.M. by the Vice-Chancellor of the University of London, Rev. J. Scott Lidgett.

Pharmaceutical Society of Great Britain.—The School of Pharmacy will be opened on Oct. 1st at 3 P.M. The inaugural sessional address will be given by Mr. Arthur W. Hill, F.R.S., the Director of the Royal Botanic Gardens, Kew.

Royal Dental Hospital, School of Dental Surgery.—The prize distribution and conversazione will be held at the Hospital in Leicester-square, at 8 P.M., on Thursday, Oct. 2nd. Sir John Rose Bradford, F.R.S., will preside.

PRESENTATION.—Dr. M. I. Finucane, surgeon and medical officer to the A Division of the Metropolitan Police for 17 years, was presented on Sept. 10th with a silver cigar and cigarette box by the officers and men of the division.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt. T. L. Cleave is transferred to the permanent list.

The following appointments are notified: Surg. Comdrs. J. Kirker to *President* and to *Hermes*; J. C. Kelly to *Victory*, for R.N. Barracks; L. S. Goss to *Erebus*, and E. B. Kelley to *Valiant*. Surg. Lt.-Comdr. S. G. Weldon to *Champion*. Surg. Lts. W. C. Sloan to *Kellett*, and F. W. Gayford to *Royal Sovereign*. Surg. Lt. (D.) T. G. A'C. Emberson to *Royal Sovereign*.

ROYAL ARMY MEDICAL CORPS.

ARMY DENTAL CORPS.

Capts. A. Williams and S. A. McCormack to be Majs.

ARMY RESERVE OF OFFICERS.

Capt. J. A. Charles, from Sup. Res. of Off., to be Capt.

ROYAL AIR FORCE.

M. T. O'Reilly is granted a short service commission as a Flying Officer for three years on the active list.

A. W. Comber is granted a temporary commission as a Flight Lt.

Flight Lt. G. T. O'Brien is transferred to the Reserve, Class D (ii).

Dental Branch.—Flight Lt. W. D. Guyler (temp. Capt., General List, Army, Dental Surgeon) is granted a non-permanent commission as a Flight Lt.

INDIAN MEDICAL SERVICE.

Lt.-Col. P. L. O'Neill to be Col.

Lt.-Col. S. M. Hepworth retires.

COLONIAL MEDICAL SERVICES.

Dr. R. Briercliffe, Deputy Director of Health, Palestine, has been promoted to Director of Medical and Sanitary Services, Ceylon.

The following new appointments have been made: Dr. F. O. Driscoll, Medical Officer, Malay States; Dr. R. G. Mayer and Dr. R. Pilot, Medical Officers, Mauritius; Dr. K. Knowles, Medical Officer, Trinidad; Dr. C. Holmes, Dr. C. R. C. Rainsford, and Dr. J. R. C. Spicer, Medical Officers, Uganda; Dr. T. C. Findlay, Medical Officer, Zanzibar.

West African Medical Staff: Dr. J. Barclay and Dr. J. Caplan, Medical Officers.

LIVERPOOL ROYAL INFIRMARY.—During 1929, the annual report shows, this hospital worked at high pressure. The 6752 new in-patients were an increase of 510 over those of the preceding year, and 50 per cent. greater than seven years ago; the average stay was 15·49 days. There were 367 births in the maternity ward, as compared with 297 in 1928. The 36,781 new out-patients were an increase of 3293. There were 3363 operations on in-patients and 3750 on out-patients. In view of a waiting-list exceeding 800, it has been decided to proceed with the building of the second portion of the new nurses' home which will release the site of the present home for additional hospital accommodation. A further £25,000 is needed to complete this second instalment.

RADIUM AT BRADFORD ROYAL INFIRMARY.—Last year 3845 in-patients were treated, an increase of 113. Their average stay was 22·5 days, and the death-rate 7·2 per cent. The average cost per patient was £8 16*s.* 11*d.*, and of each occupied bed £143 6*s.* 8*d.*, figures slightly in excess of the preceding year. There were 4686 new out-patients, an increase of 305. The casualty patients were 7953, of whom 1736 became in-patients. The report of Dr. Chester-Williams on the work of the radium therapy department, which was opened in March, 1929, states that work began with 500 mg. and 12 beds, but upon the delivery of a further 225 mg. in the autumn four more beds were made available. The long waiting-list of urgent cases makes a larger supply of radium a growing necessity. The shortness of time since the department was opened admits of no claims of cure, "but it is satisfactory to note that many patients who had inoperable cancer when admitted are apparently free from disease to-day and are leading normal lives." The total number of patients treated was 243.

MODERN TECHNIQUE IN TREATMENT

A Series of Special Articles, contributed by invitation.

CCCVII.

TREATMENT OF CASES OF ABORTION.

PART II.*

Habitual Abortion.

IN some women miscarriage is the almost invariable termination of pregnancy; in some cases the cause is clear, but in many no satisfactory explanation can be found. Syphilis, chronic renal disease, and toxæmia have long been known as causes of habitual abortion, and as these conditions can be recognised by examination of the blood or urine they can easily be detected or excluded in investigating a case. If syphilis is the cause, treatment for this disease of both parents after miscarriage has occurred will almost certainly prevent others, and even if treatment of a syphilitic woman is undertaken early in her pregnancy there is a good prospect of a living healthy child being born. Chronic renal disease which is bad enough to cause threatened abortion in early pregnancy is so dangerous to the mother's life that no attempt should be made to save the pregnancy, and in cases of toxæmia, unless there is very rapid improvement from treatment, it is better that abortion should occur. Both these conditions occurring in early pregnancy are definite indications for inducing abortion. Retroversion of the uterus is considered by some to be a common cause of abortion, but in my opinion there is no solid foundation for this view; it is very common to find the uterus retroverted early in pregnancy, but in the great majority of these cases no harm is done by the position, and the uterus comes forward at or before the tenth week without disturbance. If it becomes incarcerated there is some fear of miscarriage occurring, but even in these cases the uterus usually comes forward and the pregnancy continues. I have seen more than one miscarriage occur after reposition of a retroverted uterus early in pregnancy, and I am sure that the dangers of miscarriage are greatly increased by these unnecessary manipulations. Over-exertion, shocks, both physical and mental, long tiring motor or train journeys undoubtedly may cause miscarriage; there are some women who can take hard and tiring exercise, including tennis and riding, without disturbing pregnancy, while at the other end of the scale some are unable to get out of bed without running great risk of starting a miscarriage. Between these two extremes every grade is found, so that one woman who has had miscarriages may be able to avoid others simply by doing less, while another, if she is peculiarly susceptible to miscarriages, may have to remain in bed for several months or even during the whole of the pregnancy in order to save it.

In recent years the importance of the internal secretion of the corpus luteum of pregnancy in preventing detachment of the ovum from the uterus has been established by animal experiments, and considerable success has been obtained in the treatment of women who have had frequent miscarriages. If such women are given two or three grains of extract of corpus luteum three times a day during pregnancy a greatly increased proportion of their pregnancies will be saved. Another cause of habitual abortion is faulty or arrested development of the ovum. It is not uncommon in dealing with an abortion as late as 12 or 14 weeks to find no trace of a fœtus, which by that time should be three or four inches in length, and instead, all that is found is an ovum, perhaps the size of a hazel-nut, embedded at some point in the decidua. In other cases the pregnancy develops apparently quite normally to the fifth or sixth month, when the movements of the child begin to get less and less vigorous, the uterus does not increase at its normal rate, the heart sounds of the child become more difficult to hear, and finally cannot be heard at all; later the uterus actually becomes smaller and there are evident signs that the child is dead. After death in utero the ovum may be retained for several weeks before labour starts. This type of case suggests gradual failure of the blood-supply of the placental site to increase to meet the requirements of the developing child, which gradually becomes more and more feeble until it dies of starvation. In the first type of case the mother is often a woman who has had several children and is reaching the time of the menopause; in the second she has commonly had one normal child, or perhaps all her pregnancies have ended in the death of the child in utero between the fifth and seventh months. Some of the women of the second type show the clinical signs of thyroid deficiency, and in other cases it may be detected by their low metabolic index. Treatment by thyroid extract should be undertaken in these cases, and already several successful results have followed its administration in women who have had more than one pregnancy that has been terminated by gradual failure of the child in utero.

ADVICE ON THE AVOIDANCE OF ABORTION.

In advising women during pregnancy who are apparently normal with a view to avoiding miscarriages, it is important to remember that some women are unable to lead an ordinary life without bringing on miscarriage, and that in many any tiring or strenuous exercise will upset pregnancy. When a woman is in her first pregnancy it is impossible to know whether she is liable to miscarriage or not, so that the only safe course is to advise a primigravida to take reasonable care and to avoid hard exercise and getting overtired. If she goes through her first pregnancy without any disturbance, she can on another occasion lead an ordinary life with very little risk of doing any harm. If a woman has a miscarriage in her first pregnancy she should certainly take special precautions against over-exertion; games like tennis and golf, and riding should be avoided.

Illegal Abortion.

Often when a doctor is called in to treat a woman who is having or has had an abortion, he may suspect that its cause has not been natural, and he may indeed be virtually certain that attempts have been made to procure illegal abortion. If any intra-uterine manipulation has been done there is always grave risk of infection, so that a doctor may find himself in the position of treating a woman for abortion who may die from the effects of infection introduced before he saw her, and be faced with the responsibility of a coroner's inquest and possibly the suspicion that he himself has procured the abortion.

If a doctor is called in to treat an abortion it is, of course, his duty to save the woman as far as possible from danger, but if he suspects or has reason to know that abortion has been procured by any means, he should certainly call in another doctor in consultation. If this is not done and the patient dies there may be no evidence whatever except his word to disprove an

* Part I. appeared last week.

accusation against him of illegal practice, whereas the support of another doctor may help to save him from disagreeable suspicion. If the patient recovers from an abortion which the doctor virtually knows has been induced the general opinion is that there is no need for him to make a statement to the police; but if the patient should die and he is in any way suspicious of the cause of the abortion, it is his duty to report the matter to the coroner. He should on no account sign the death certificate.

J. P. HEDLEY, F.R.C.S.Eng.,
Obstetric Physician to St. Thomas's Hospital.

SPECIAL ARTICLES

SOME IMPRESSIONS OF THE INTERNATIONAL CONFERENCE ON SILICOSIS,

HELD AT JOHANNESBURG, AUGUST, 1930.

BY A. J. HALL, M.D., F.R.C.P.,
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF SHEFFIELD.

SOUTH AFRICA was the first country to deal systematically with the problem of occupational silicosis. In less than 20 years after gold-mining had begun on the Witwatersrand disability amongst the miners on account of respiratory trouble was so widespread and so serious that measures for prevention and compensation became imperative. The burden was shouldered in the large and broad spirit which is so characteristic of that great and progressive country.

Organisation.

During the last 25 to 30 years the medical organisation has been gradually extended and improved, methods of prevention have been increased and modified, compensation has been adjusted by successive Acts of Parliament. It was therefore natural that Johannesburg, the centre of the gold-mining industry, should be chosen as the place for the holding of the first International Conference on Silicosis. As one of the pilgrims to that Mecca I propose to give a brief account of the conference and its results.

The actual number of delegates was necessarily small, yet in spite of the long journey and the comparatively special nature of the subject under consideration, there were representatives not only from all parts of Europe but also from the United States, Canada, and Australia—a reminder of the many urgent and important points which still await settlement in almost every land.

The work of organisation had been undertaken by the International Labour Office of the League of Nations at Geneva, in close coöperation with the Chamber of Mines at Johannesburg. It is the first international conference as yet held outside Europe. It was opened on August 13th by the Minister of Posts and Telegraphs, who formerly welcomed the delegates to South Africa. From then onwards it met for two sessions almost daily until August 27th when the resolutions which it had adopted were submitted to a public session.

The general plan was as follows. A few weeks before the date of the conference each delegate was supplied with a series of 25 reports. Each of these had been written by a delegate. Whilst those of the visiting delegates dealt with the occurrence in different industries, distribution and mode of handling of the disease in each country respectively, those written by the South African delegates dealt each with one particular aspect of the subject with which the writer was especially concerned and indicated in detail how it was handled in South Africa. These reports, which will appear in the publications of the International Labour Office in due course, formed the basis of the discussions before the conference. The discussions were divided into three groups: (1) preventive, (2) clinical and pathological, and (3) prognosis, compensation, and after-care. Rapporteurs selected from the South African and foreign delegates were appointed for each of these sections, and their reports after full discussion formed the basis of the final resolutions adopted by the Conference.

Work of the Medical Bureau.

Before beginning the discussions, two days were devoted to showing the visiting delegates the methods of working adopted at Johannesburg. The work of the Medical Bureau is carried out under one roof, the Medical Research Institute, a large handsome building standing on a hill at the north side of the city, within easy distance of the station adjoining the hospitals and the medical school. As its name implies, this is primarily a place for medical research of all kinds for which it is fully supplied with well-equipped laboratories. There are spacious animal houses, including stables for 50 horses, used for the preparation of sera of various kinds, with grazing ground alongside.

The pathological laboratories of the Institute deal with the whole of the silicotic work. The clinical and radiological work connected with silicosis is carried out by the Medical Bureau, which has a certain part of the ground floor of the Institute allotted to it for that purpose. This is necessarily a very large organisation. When one takes into account that every white miner has to pass an initial physical examination of fitness before being allowed to apply for work in the industry, and that when at work he must present himself for re-examination at intervals of six months, the actual number of examinations of such individuals amounts to over 30,000 annually. These examinations at the Medical Bureau apply only to the miners of European extraction, and do not include any work in connexion with the much larger number of non-European miners and native labourers, amounting to about 200,000, for whom a separate and more simple form of supervision is provided. Over this work the Bureau exercises a general supervision only. It is unnecessary to go into details of the exact procedure of all examinations at the Medical Bureau. Suffice to say, that it consists of seven whole-time clinicians, together with a radiologist, pathologists, and the requisite clerical staff, photographers, &c.

Each morning is devoted entirely to the examinations of the day. Each candidate, after full details of his history have been taken, is photographed for identity purposes. He is then X-rayed and undergoes a full clinical examination by one of the clinicians, particularly as regards respiratory functions. Should there be anything in the least doubtful in this respect he is sent to another clinician for a second independent examination. These examinations are all completed by midday and after lunch the seven clinicians meet

to consider all the cases. The proceedings must be unique amongst medical doings, and are certainly most impressive to a looker-on.

A CLINICAL TEAM.

The clinicians, under the presidency of the chief medical officer, sit around a large circular table in the centre of which is a revolving radiogram stand, with two faces. As each candidate's number is read out by the President from his list an attendant places the corresponding X ray film of that morning on one side of the stand, and the last previously taken film on the other side. At the same time the clinician who has examined the man in the morning reads out briefly his weight, his chest measurements, and any findings in the chest, &c. The radiogram stand is revolved so that all can see the films. Opinions are freely expressed by all before a final decision is reached. In most cases the decision is speedy and unanimous, and indeed the rapidity with which the whole proceedings are carried out is at the outset somewhat bewildering to the observer seeing it for the first time. It soon becomes clear, however, that this rapidity, an essential in dealing with such large numbers, has been attained not by any sacrifice of thoroughness or accuracy, but merely by an excellent organisation on the part of a team working together day by day and knowing exactly what is the share of each.

As in other well-organised undertakings, the bulk of the work has already been done before the sitting of the Bureau, which has only to intervene in any case presenting unusual or obscure phenomena. We lookers-on were satisfied that the Bureau carried out its functions on the whole thoroughly and efficiently, and that there was ample provision for the careful investigation of doubtful cases, which provision was fully made use of. Thus any case which presents difficulties and calls forth real differences of opinion is sent to the ward connected with the Bureau for special further observation.

PATHOLOGICAL MATERIAL.

So much for the clinical side of the work, as regards the pathological side it is carried out in the laboratories of the Institute. Here the material is necessarily also vast in amount and offers an unrivalled field for observation. The routine duties in connexion with compensation cases necessarily take up the greater part of the time of the staff, but a considerable amount of research has been and is being carried out by the pathologists, some of which is of evident promise. When, however, one considers the many important problems connected with this subject which are calling urgently for solution, and the immense amount of material here available for almost any line of research, one cannot help feeling that more time and money could be well spent upon providing active research workers quite free from all routine duties.

Mention must also be made of that important side of the Bureau—namely, the radiographic. For the purely technical details reference may be made to the coming publication by the International Labour Office of the reports dealing with the subject. Actually, for the information of the delegates, a wonderful exhibition of films had been staged. This showed every phase of silicosis with all its modifications, and its combination with tuberculosis in all degrees and forms. Many series showed radiograms taken at regular periodic intervals extending over a number of years, in which the actual development and course of the disease were clearly demonstrable. In some 400 cases of silicosis the Bureau has been able thus to compare together the clinical, radiological, and post-mortem findings, and these composite results have added greatly to our knowledge. Further work on these lines is being carried on.

NATIVE WORKERS.

It seems at first sight a little strange that this close medical supervision of all the miners of European extraction (that is, the white men) should not be equally necessary in the case of the non-European or native workers underground, who relatively number about 20 to 1. For this there is a good explanation. The South African records since the Bureau was established show clearly that Rand miners under existing conditions are practically exempt from recognisable silicosis for the first two or three years of exposure underground. Even up to six or seven years the incidence is only very small. The native worker rarely remains in the mines for more than a few months, perhaps 9 or 12, after which he returns to his kraal and his wife, having earned enough money to set him up. He may never return to the mine, or he may do so for another short period followed by another interval of home life. The result is that comparatively few of the natives are disabled by silicosis, and the stringent medical machinery adopted in the case of long-time European miners is not required.

As a matter of fact, however, there is a considerable medical control over the native workers. Each man undergoes two general physical examinations before being allowed to enter the mines, particular attention being given to the question of pulmonary tuberculosis. Throughout his period of work also, a careful watch is kept for any suspicion of this. The native population is extremely susceptible to tuberculosis, and tuberculosis is gradually being recognised as the factor of greatest importance in the problem of silicosis as a disabling disease. After the visiting delegates had been shown all the details of this great machinery for coping with the effects of silica dust amongst the Rand miners, the actual Conference began its sittings.

The Discussions.

The printed reports referred to above were taken as read. Their discussion gave rise not only to many interesting points, contributed by the delegates from overseas with experience of the disease as it presents itself in industries with working conditions entirely different from those in the South African mines, but it also elicited a great amount of first-hand information from the South African delegates in elaboration of points about which their reports had been necessarily incomplete or difficult to understand.

As was stated above, these discussions were divided into three large divisions:—

1. Preventive Measures.

Here as elsewhere it became evident from the outset that accurate knowledge of almost every detail is still wanting. It was agreed that the disease which under this heading it is sought to prevent is that which arises from the inhalation of free silica (SiO_2) as distinct from silica in chemical combination with other substances.

It becomes noticeable after widely differing periods of exposure to siliceous dust depending apparently upon: (*a*) the amount of dust inhaled; (*b*) the percentage of silica contained therein; (*c*) the size-frequency (or fineness) of the particles inhaled; (*d*) the nature and sort of such other substances (including vapours and gases) as may be inhaled simultaneously, or otherwise; (*e*) the powers of resistance of the individual concerned; and (*f*) the presence or absence of a complication by an infective process.

Whilst the importance of each and all these factors was fully recognised, this section of the discussions spent itself chiefly upon the first three. As regards the question of dust measurements, it was felt that our lack of accurate knowledge or of any agreed standard of measurement calls for immediate research, towards which the assistance of the pure physicist should be sought. Until some standard is set up applicable to all industries in which there is exposure to free silica dust, it is impossible to form any accurate estimate of the relative risk of such industries or to formulate the best methods of coping with each in particular. The Conference expressed the strong hope that the settling of such a universal standard of dust measurement might be attempted immediately, and felt that the place best suited for such research would be in the Witwatersrand mines of South Africa. When such a standard means of measuring dust is fixed, a complete world survey of dusty industries of all kinds should follow at an early date.

Much discussion took place as to the relative values of ventilation, general and localised, control by means of water or other solutions, and the use of masks of various kinds. It was pointed out that no single one of these methods can be equally well applied to every form of industry involving exposure to silica dust. Measures which may prove efficacious in the case of a man working at a bench or at a wheel would be quite unfitted for one working underground at the rock face and vice versa. Water, whilst allaying the dust, necessarily increases the humidity, often to an extent which may render the risk of a concomitant bacillary infection more serious. Indeed, the factors involved in all such preventive measures are so many and their interaction is so complex that great caution is necessary before deciding upon the best method in any particular industry. Under any circumstances the importance of general and localised ventilation was urged as one of the best hygienic measures in dusty industries.

Besides these preventive measures dealing with the noxious cause, others of great importance concern the resistance of the worker. In this respect emphasis was laid on the necessity of ensuring that a certain standard of physique should be generally required for all workers entering industries in which the risk of exposure to silica dust is great. This can be met to some extent by an initial medical examination such as already exists in South Africa and in some other places. Further, as experience shows that the onset of silicosis bears a definite relation to length of exposure to dust, periodic medical examinations of those engaged in the industries are essential. Such examinations should be carried out by medical experts who should have at their disposal every facility for conducting the examination. In effect this means that the examinations must be as full and complete as modern medical knowledge can offer.

2. Medical Aspects.

This division of the subject gave rise to prolonged and interesting discussions. On the clinical side general agreement was reached that the earliest recognisable stage of silicosis could be reasonably fixed by the combination of history, clinical signs, and radiographic appearances. The first recognisable stage of silicosis has been called by the South African Medical Bureau "the anteprimary stage," and as such is recognised in their legislature dealing with the subject. The Conference, whilst fully realising how and why this term arose in South Africa, felt that it would be a misfortune to perpetuate it in other countries, and suggested calling the three stages first, second, and third respectively, in order to avoid confusion.

DEFINITION OF THREE STAGES.

The first stage of silicosis corresponds with the South African anteprimary, the second with their primary, the third with their secondary stage. Tuberculosis may occur with silicosis in any stage. Definitions of each stage based upon the history of employment, clinical features, and radiological findings were laid down, and the importance of due consideration to all three of these data before arriving at a diagnosis was insisted upon. Neither the clinical features, nor the radiological findings alone, nor the two combined are in every case sufficiently characteristic to warrant a definite distinction from other pneumonoconioses, although in some cases and in some stages they may be. These definitions will be found in the report of the Conference to be published shortly.

As regards the pathology of the disease interesting experimental results were shown from prolonged dusting with free silica in animals. From these the Conference feel justified in concluding that "silicosis is a pathological condition of the lungs due to inhalation of silicon dioxide which can be produced experimentally in animals." Further experimental work on these lines is urgently called for, and gives hope of fruitful results in many directions.

MICROSCOPIC CHANGES.

So far the investigations suggest that the microscopic pathological changes which may be produced by the prolonged inhalation of silica dust are: (*a*) The development of a dry bronchiolitis characterised by an accumulation of dust-filled phagocytes in or in relation to the terminal bronchioles with possibly some desquamation of their epithelium. (*b*) The accumulation of dust-containing phagocytes about and in the intralymphoid tissue and their transportation through the lymphatics into the tracheobronchial lymph nodes. (N.B.—Up to this point in the process it is considered that the actual disease silicosis is not yet constituted.) (*c*) The gradual development of fibrous tissue within such accumulations of phagocytes and the formation of characteristic nodules of hyaline fibrous tissue. (*d*) Degenerative changes in these foci. (*e*) The hyaline nodules increase in size by extension at their periphery. Coalescence of adjacent nodules takes place and brings about involvement of further areas of the lung. (N.B.—The conditions described under (*c*), (*d*), and (*e*) constitute the disease silicosis.)

MACROSCOPIC CHANGES.

Macroscopically the changes observed in silicosis are:—

(*a*) *In the first stage:* A variable number of palpable pearly-white nodules up to 2 or 3 mm. in diameter on the pleural surface of the lung. On section the cut surface of the lung is studded with pigmented foci, widely scattered, a moderate proportion of which are only just palpable. The tracheo-bronchial lymph nodes are slightly enlarged and deeply pigmented, and may exhibit foci of fibrous induration.

(*b*) *Later stages:* The fibrotic nodules are increased in number, size, and density, and coalescence of these may be found. The portion of the lung between the fibrotic nodules may be emphysematous. The tracheobronchial lymph nodes are still pigmented, may be smaller in size than those seen in the early stages, and are fibrosed.

The above refers to the features produced in silicosis alone, but as is well known the combination of tuberculosis with silicosis may occur at any stage

and modifies the clinical, radiological, and symptomatic picture profoundly. Moreover, there is reason to think that other pulmonary infections may similarly complicate a simple silicotic process and add to its general pathological effect. In this connexion difficulties present themselves. What these exactly are may be made more evident by a short account of the present position in South Africa.

RELATION OF SILICOSIS AND TUBERCLE.

By their existing legislation two distinct groups of cases are compensated: (1) those suffering from silicosis, and (2) those suffering from tuberculosis with silicosis. For this purpose tuberculosis is defined by the Act and the definition makes it clear that the tuberculosis must be recognisable as such. These two broad groups exist and the relative disability which they cause is sufficiently different to call for a difference in the amount of compensation.

With the increasing experience of recent years, however, it has been realised that all the cases coming under Group 1 (Silicosis) are not identical either in the extent of disability, radiological findings, or rate of progress.

For purposes of reference, therefore, the Medical Bureau divides Group 1 (Silicosis) into two subgroups: (A) Simple Silicosis, and (B) Infective Silicosis. The latter show relatively greater disability than their physical signs would lead one to expect; radiologically they show the hanging heart, and, on the whole, they get worse more quickly than cases of Type A—although much less rapid and serious in progress than cases of Group 2 (Tuberculosis with Silicosis). It must be clearly understood that cases both of Subgroup A and Subgroup B are classified for compensation purposes as Group 1—to which they obviously belong.

"INFECTIVE SILICOSIS."

As is stated above, in South Africa this group of cases is at present referred to by the Medical Bureau as silicosis of infective type or "infective silicosis." The term is made use of entirely for scientific purposes and without any commitment as to the nature of the accompanying infection. It does not occur in their legislative terminology. The so-called infective element may be different in different cases, or may be multiple in an individual case. There is some evidence obtained from biological experiments, made from the lungs of a certain number of cases of infective type after death, that the particular infective element may have been a latent focus of pre-existing tubercle, which has not shown recognisable features of tuberculosis during life. There is comparatively little evidence as to the occurrence or distribution of such a twofold type of simple silicosis in other countries and in various dusty industries, and it was felt that on this difficult aspect of pathology the available data are not yet sufficient for any dogmatic statement. The Conference recommended that further scientific research into the ætiology, pathology, and diagnosis of silicosis should be undertaken on an international basis at an early date with especial reference to this point.

As regards pneumonoconioses other than those coming under the definition of silicosis, there was considerable discussion but no very definite conclusions were arrived at, and it was felt that this subject also calls for further investigations.

Reports on the radiographic methods in use in South Africa and Australia are attached as appendices to the reports to which reference may be made for details. In this connexion the Conference thought it desirable to draw up a terminology for the classification of radiograms, which although not presenting appearances corresponding with those accepted as recognisable silicosis yet present linear radiating shadows of greater or less extent beyond normal. In South Africa these have hitherto been classified as radiograms showing varying degrees of fibrosis. It was suggested that it would be better to classify these in terms of shadows—as slight, moderate, or well marked increase of linear radiations, rather than in terms of fibrosis which they may or may not represent.

3. Prognosis and Compensation.

On prognosis the evidence as regards different countries and various industries was somewhat conflicting. On the whole, the hope that early removal from the industry in the first stage of silicosis would necessarily arrest the progress of the disease has not been realised, and it is evident that when a worker has reached the stage of recognisable silicosis he has a definite pathological condition which may or may not progress unfavourably according to various accompanying circumstances, the exact nature of which is obscure. There is also some evidence that a certain proportion of workers suffering from simple silicosis may continue in the industry without any greater increase in progress of the disease than occurs in those leaving it. On these points further information is wanting, and it is possible that fuller knowledge of various industries would show considerable variations in results.

The prognosis in cases of declared tuberculosis with silicosis is always serious. It is worse (*a*) when the tuberculous infection occurs at the outset of silicosis, (*b*) in younger than in older subjects, and (*c*) than in cases of tuberculosis alone.

Compensation and after-care were only dealt with from their medical aspects, and the following conclusions were arrived at: (*a*) Silicosis, complicated or not by tuberculosis, constitutes an occupational disease which may involve reduction of working capacity. (*b*) The determination of disability calls for expert medical examination at which account must be taken of the clinical and functional condition as a whole. (*c*) Seeing the very close and serious connexions between tuberculosis and silicosis, compulsory removal from the industry should be enforced in all cases of declared tuberculosis. (*d*) In those countries where legislation provides for compulsory removal from occupations involving exposure to silica dust of workers affected by silicosis, it should not necessarily be applied to workers who have been in the same industry for a period of not less than 15 years and have reached the age of 45 years.

As regards after-care the provision of sanatoria was approved, and hopes were expressed that further attempts might be made to solve the difficult problem of rehabilitation.

Conclusion.

Although the Conference cannot be said to have made any material addition to pre-existing knowledge, yet it has in many ways served a useful purpose. By collecting together all the available information about dust diseases from all parts of the world, it has shown not only the number but also the position of the gaps in our knowledge of the subject, and so given valuable indications for future lines of research. It has enabled certain standards to be agreed upon, by which future work on this subject may be comparable in whatever country or industry it is carried on. Finally, it has emphasised the urgent necessity for further experimental investigations into almost every aspect of the problem.

THE MEDICAL REGISTER:

UNTRACEABLE PRACTITIONERS IN 1930.

WE are requested by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. It is possible that some of the undermentioned practitioners may have communicated with the Council since the list was drawn up. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. Those marked "(S)" should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

Ahern, Albert J. W., M.D., 1927 (Col.).
Alexander, William N., L.R.C.P.S., 1905(S).
Anderson, Frederick, M.B., 1897(S).
Atkinson, Arthur E., M.R.C.S., 1890(E).

Barlow, George, M.R.C.S., 1896(E).
Barratt, Grantley, M.B., 1912(E).
Barry, John C., M.B., 1926(I).
Beavis, John D. W., M.R.C.S., 1897(E).
Beckingsale, Daniel L., M.D., 1872(E).
Bennett, Henry S., M.R.C.S., 1903(E).
Bhattacharyya, Nirad B., M.B., 1926(Col.).
Bielby, Elizabeth, M.D., 1885(E).
Biggs, Lesley N. H., M.B., 1901(E).
Birch, Henry P., M.R.C.S., 1882(E).
Birkinshaw, Frank T., L.M.S.S.A., 1925(E).
Blandy, Lizzie, L.R.C.P.S., 1903(S).
Bobo, Rosalvo, L.M.S.S.A., 1927(E).
Bradley, Harold H., L.R.C.P.S., 1908(S).

Chapman, William J., M.B., 1927(Col.).
Chevreau, Paulin R., M.R.C.S., 1914(E).
Coates, Albert P., L.R.C.P.S., 1889(E).
Connor, Thomas F., L.R.C.P.S., 1920(I).
Cook, James E. (formerly Cook, J.), M.B., 1908(S).
Coombe, Thomas S., M.R.C.S., 1891(E).
Corr, Anthony, M.B., 1925(I).
Coryn, Herbert A. W., M.R.C.S., 1888(E).
Couper, William D., M.B., 1924(S).
Curtain, William J. V., L.R.C.P.S., 1914(S).

Davies, Charles S., L.R.C.P.S., 1884(S).
Davies, Thomas H. R., M.R.C.S., 1922(E).
Dick, James C., M.B., 1909(S).
Dixon, Charles W., M.B., 1914(E).

Edwards, Howard S., M.R.C.S., 1926(E).
Edwards, Thomas A., M.B., 1927(S).
Ellery, Ernest E., M.R.C.S., 1898(E).
Ellis, David, M.R.C.S., 1927(E).
Erskine, William A., M.B., 1926(S).

Flood, Patrick J., L.R.C.P.S., 1917(I).
Forster, William A de V., M.B., 1901(I).
Fusacchia, Nicola, M.D., 1921(For.).

Games, John H. P., M.R.C.S., 1928(E).
Garrett, Charles S., M.B., 1926(S).
Geoghegan, Charles E., L.R.C.S., 1876(I).
Gibson, Hugh C., M.B., 1904(S).
Gilmour, John G., M.B., 1920(S).
Girdler, George T., L.R.C.P.S., 1881(E).
Grace, Alfred H., L.S.A., 1897(E).
Griffiths, Gilbert, M.R.C.S., 1876(E).
Groot, Antonius A. M., M.R.C.S., 1926(E).

Halahan, Thomas D., *O.B.E.*, M.B., 1890(I).
Hall, Thomas G., M.B., 1891(E).
Harling, Anne T. (Mrs.) M.R.C.S., 1926(E).
Hartley, Sydney, *M.C.*, B.M., 1921(E).
Hearsey, Herbert H., *O.B.E.*, M.B., 1890 (E).
Hichens, Peverell S., B.M., 1896(E).
Hinsbeeck, Frank C. S., M.B., 1925(E).
Hobson, John M., M.D., 1875(E).
Hodgson, Harold W., *M.C.*, M.R.C.S., 1900(E).
Hopper, Leonard B., L.R.C.P.S., 1902(S).
Horwitz, Charles H. S., M.R.C.S., 1919(E).
Hughes, Richard M., L.M.S.S.A., 1891(E).
Hunt, David M., L.M.S.S.A., 1916(E).
Hunter, Stewart, M.B., 1928(Col).

Iago-Jones, David E., M.R.C.S., 1926(E).
Illingworth, Harold T., M.B., 1929(Col).
Ivers, John G., M.R.C.S., 1907(E).

Jago, Charles S., M.R.C.S., 1883(E).
Jennings, David R., M.B., 1926(Col).
Johnson, George M., L.R.C.P.S., 1926(S).
Jones, Owen R., L.R.C.P.S., 1915(S).
Jones, William A., L.M.S.S.A., 1922(E).

Kahn, Robert, L.M.S.S.A., 1927(E).
Kapoor, Sobha R., L.R.C.P., 1902(E).
Keating, Henry T., M.D., 1920(Col).
Kidd, James G., M.B., 1925(S).
Kilroe, Sidney H. J., M.B., 1908(E).

Landreth, John F., M.B., 1926(Col).
Leadbetter, James L., M.B., 1896(S).
Lee, George, M.R.C.S., 1927(E).
Litvak, Abramo, M.D., 1920(For).
Livingstone-Learmonth (Mrs.), Agnes M., *C.B.E.*, M.B., 1901(S).
Livingstone-Learmonth, Basil L., M.B., 1896(S).
Lloyd-Evans, Vaughan, M.B., 1907(S).
Low, May A., M.B., 1925(S).
Lownds, Henry A., L.R.C.P.S., 1882(E).

McElwee, Daniel, M.B., 1920(I).
McGregor, Donald F., M.B., 1921(S).
McKenna, Peter, M.B., 1888(I).
MacKenzie, Alexander, M.R.C.S., 1896(E).
McKenzie, James, L.R.C.P.S., 1885(S).
McLaren, William C., L.R.C.P.S., 1927(S).
McLellan, William M. K., M.B., 1926(S).
McLeod, Alexander L., M.B., 1924(S).
McPhun, John F., M.B., 1882(S).
Manasseh, Antonius J., M.R.C.S., 1897(E).
Matthews, Thomas R., M.B., 1898(S).
Maxwell, Raymond, *O.B.E.*, M.B., 1892(S.)
Middlemore (Miss) Merall P., M.B., 1922(E).
Milledge, Geoffrey W., L.R.C.P.S., 1927(S).
Miller, Archibald, M.B., 1928(S).
Millicans, Ebenezer, L.R.C.P.S., 1901(S).
Milligan, William, M.R.C.S., 1868(E).
Mitchell, George A., M.B., 1924(S).
Mitchell, Stanley C., M.B., 1918(I).
Moore Thomas C., L.R.C.S., 1883(I).
Morton, Francis W. W., L.R.C.P.S., 1881(E).
Moyles, Thomas H., L.R.C.P., 1886(I).
Murray, Joseph O., L.R.C.P., 1919(I).
Myburgh, Adrian J., M.B., 1918(S).

Nash, Louisa C., L.R.C.P.S., 1895(S).
Nixon, Arthur P., M.R.C.S., 1898(E).
Norris, Marjorie, M.B., 1921(S).

O'Brien, Francis J., M.B., 1926(S).
O'Brien, Patrick J., M.B., 1892(I).
O'Flaherty, Michael J., M.B., 1919(I).
O'Flynn, James P., M.B., 1914(I).
Ogilvie, Marjory J. A., L.R.C.P.S., 1922(S).
O'Keeffe, Daniel S. A., M.B., 1902(I).
O'Kelly, Cyril J. A., L.R.C.P.S., 1925(I).
O'Kelly, John J., L.R.C.P., 1912(I).
Olaribigbe, Alamu O., L.R.C.P.S., 1915(S).
O'Reilly, David J., L.R.C.P.S., 1901(I).
O'Shea, Michael J., L.R.C.P.S., 1910(S).
Owen, Allan C., M.B., 1902(S).

Paget, Owen F., M.B., 1895(E).
Palmer, Guy F., L.S.A., 1893(E).
Palmer, Septimus, L.K.Q.C.P., 1885(E).
Pandit (Mrs.), Malatibai (formerly Madgavkar, M.), M.R.C.S., 1919(E).
Papadopoulos, Stylianos G., M.R.C.S., 1912(E).
Parbury, Frederic D., M.R.C.S., 1902(E).
Pare, Frank W., M.R.C.S., 1923(E).
Parke, Duke, L.R.C.P., 1868(I).
Parmar, Vithaldas L., M.R.C.S., 1924(E).
Parthasarathy, Parasurama, L.R.C.P., 1921(E).
Pasco, Bernard C. W., M.R.C.S., 1915(E).
Pateman, Ernest A. T., M.R.C.S., 1924(E).
Patterson, Herbert C., L.R.C.P., 1924(I.)
Patterson, Mary E., M.B., 1922(I).
Pauw, Daniel B., M.R.C.S., 1921(E).
Payne, Archibald G., M.R.C.S., 1902(E).
Payne, Florence M., L.S.A., 1902(E).
Payne, Percivall J. G., M.B., 1927(S).
Peacan, Luke, M.R.C.S., 1869(E).
Pemberton, Charles A., M.R.C.S., 1907(E).
Penny, Charles H., M.D., 1878(I).
Penny, Henry J., L.R.C.S., 1878(I).
Penny (Mrs.), Muriel M. (formerly Kenworthy, M. M.), M.R.C.S., 1919(E).
Penton, Richard H., *D.S.O.*, M.R.C.S., 1886(E).
Peoples, Charles J., L.R.C.P., 1927(E).
Peppard, Matthew, M.B., 1926(I).
Perdrau, Joseph A., M.D., 1898(E).
Peringuey, Louis C., M.B., 1927(E).
Pestana, Joseph V., L.A.H., 1910(S).
Peters, Alfred J. A., L.R.C.P.S., 1892(S).
Pfaff, Franz L. F. E., L.S.A., 1894(E).
Phelan, James, M.B., 1921(I).
Phillips, Percy R. O., M.R.C.S., 1916(E).
Phillips, Theodore J., M.B., 1898(E).
Phipps, Michael W., M.R.C.S., 1909(E).
Pierce, Michael J., L.R.C.P., 1908(I).
Pike, John D., M.B., 1924(E).
Pilcher, John W., M.C.P. & S., 1919(Col).
Pile, Charles D., M.B., 1915(I.).
Pilkington, John E., M.R.C.S., 1877(E).
Pincus, Joseph V., M.B., 1926(I).
Pires, George, M.R.C.S., 1891(E).
Plunkett, Bernard, L.R.C.P., 1925(I).
Pocock, Theodore C., M.R.C.S., 1905(E).
Pollock, Alexander M., M.B., 1906(S).
Pollock, Sir Edward J., M.R.C.S., 1863(E).
Poolman, Arthur E., M.R.C.S., 1887(E).
Pope, Charles E., M.R.C.S., 1877(E).
Pope, Herbert F. M., L.R.C.P., 1879(E).
Popert, Alfred W., M.R.C.S., 1886(E).
Portley, Catherine, M.B., 1925(I).
Posthuma, Margaret P., M.B., 1925(E).
Power, John E., M.B., 1914(I).
Prendiville, John, L.R.C.P., 1908(I).
Proctor, John S., L.R.C.P., 1891(I).
Pruitt, Marion C., L.R.C.P., 1915(E).
Purves, Charles W., L.R.C.P., 1884(E).
Purvis, Arthur, L.M.S.S.A., 1926(E).
Purvis, Walter P., M.B., 1927(E).

Quaife, William F., M.B., 1883(S).
Quertier, Ernest C., M.B., 1893(S).
Quinlan, Bernard G., M.B., 1912(I).
Quinlan, Cecil J., M.B., 1919(I).
Quraishi, Mohammad J., L.R.C.P., 1926(E).

Radloff, Theodor, M.B., 1920(I).
Radmore, George R., L.S.A., 1885(E).
Rafferty, William, M.B., 1926(I).
Rankin, William D., M.B., 1905(E).
Rao, Dhanavada S. R., M.B., 1915(E).
Rao, Palhalli R. S., L.R.C.P., 1926(E).
Rastrick, Robert J., M.R.C.S., 1901(E).
Ratnarajah, Hallock, M.R.C.S., 1918(E).
Ray, Tejendra N., M.B., 1920(E).
Rayner, Francis L., M.R.C.S., 1922(E).
Rayner, William H., M.R.C.S., 1904(E).
Raysmith, Frank W., L.R.C.P., 1928(E).
Razzak, Abdalla A., L.R.C.P.S., 1927(S).
Redelinghuys, Johannes, M.R.C.S., 1920(E).
Redhead, Theophilus A., M.B., 1928(E).
Rees, Rice, L.S.A., 1902(E).
Reeves, Thomas C., M.R.C.S., 1911(E).
Reid, John, L.R.C.P., 1891(E).
Rendall, John M., L.R.C.P.S., 1894(S).
Reynolds, Hilda E., M.R.C.S., 1922(E).
Reynolds, Walter E., M.B., 1926(I).
Richards, Hilda W., M.R.C.S., 1919(E).
Richards, William P. E., M.B., 1925(S).
Richardson, Arthur, M.R.C.S., 1875(E).
Riesnik, Jossel, M.B., 1920(S).
Rimmer, Ralph, M.B., 1914(E).
Ritchie, John, M.B., 1910(S).
Rizkalla, Nagib, M.R.C.S., 1927(E).
Robb, Robert McN., M.B., 1906(S).
Roberton, John A. W., M.R.C.S., 1923(E).
Roberts, Ernest, M.R.C.S., 1903(E).
Roberts, Llewelyn, L.R.C.P., 1890(E).
Robertson, Charles W., M.B., 1925(S).
Robertson, Walter J., M.B., 1924(Col).
Robertson, William, M.B., 1901(S).
Robinson, Charles St. H., L.R.C.P. & S., 1896(E).
Rock, William, L.R.C.P.S., 1894(S).
Rodolph, George H., L.M.S.S.A., 1907(E).
Rodrigues, Gabriel F. A., M.R.C.S., 1913(E).
Rogers, Henry, *D.S.O.*, M.B., 1899(I).
Ronayne, Charles O., L.R.C.S., 1863(I).
Rosie, Jessie I., M.B., 1927(S).
Rossiter, Harold T., M.R.C.S., 1908(E).
Rouse, Rolla E., L.S.A., 1883(E).
Rowcroft, George F., *D.S.O.*, M.R.C.S., 1914(E).
Roy, Alexander, M.B., 1924(S).
Rubinstein, Max, M.R.C.S., 1924(E).
Russell, James, C.M., 1877(E).

Russell, Matthew J., L.R.C.P., 1899(I).
Russell, William, *M.C.*, M.B., 1915(I).
Ryan, Daniel, L.K.Q.C.P., 1879(I).
Ryan, James D., L.R.C.S., 1883(I).
Ryan, John, M.D., 1885(I).
Ryan, Louis V., L.A.H., 1925(I).
Ryan, William A., M.B., 1914(I).
Rygate, Arthur M., M.R.C.S., 1897(E).
Rylance, Henry T., L.M.S.S.A., 1928(E).

Sahib, Khan, M.R.C.S., 1917(E).
Sai, Pinthu, M.R.C.S., 1914(E).
Salama, Abd E. Y. M., M.R.C.S., 1926(E).
Salama, Anis, M.R.C.S., 1923(E).
Sammon, William D., L.R.C.P. & S., 1906(I).
Sampson, Basil, *M.C.*, M.B., 1915(E).
Sampson, Bernard M., M.R.C.S., 1903(E).
Sanderson, Arthur F., M.R.C.S., 1909(E).
Saneyoshi (Viscount) Yasuzumi, M.R.C.S., 1883(E).
Sankeralli, Esau J., M.B., 1924(I).
Saul, Victor S., M.R.C.S., 1889(E).
Saunders, Francis H., M.R.C.S., 1881(E).
Saundry, James B., M.R.C.S., 1868(E).
Savage, John J., M.R.C.S., 1917(E).
Sawhney, Mulk R., M.R.C.S., 1908(E).
Sayed, Farid H. A., M.R.C.S., 1914(E).
Schafer, David P. H., M.R.C.S., 1927(E).
Schafer, Noel T. H., M.R.C.S., 1927(E).
Schaffer, Rudolf, M.B., 1924(I).
Schapiroff, Abraham, M.R.C.S., 1905(E).
Scheurer, Jan G., M.R.C.S., 1892(E).
Schultz, Hellmuth H. E., M.R.C.S., 1925(E).
Schultz, Stuart D., M.R.C.S., 1925(E).
Scott, Florence A., L.R.C.P., 1912(I).
Scott, Henry M., L.R.C.S., 1874(I).
Scully, Albert M., M.D., 1880(I).
Scully, Michael, M.B., 1923(I).
Seale, Alfred C., L.R.C.P., 1894(I).
Selim, Hassan H., L.M.S.S.A., 1919(E).
Sellars, Maurice W., M.B., 1920(I).
Sergeant, Cecil F. H., M.B., 1922(E).
Sexton, Joseph P., M.B., 1923(I).
Shaffi, Mian M., L.M.S.S.A., 1917(E).
Shah, Tribhovandes O., M.R.C.S., 1914(E).
Shanahan, Richard, M.B., 1913(I).
Sharpe, Edward L., M.B., 1924(I).
Shaw, Harry C. C., M.R.C.S., 1884(E).
Shaw, Richard G. V., M.R.C.S., 1921(E).
Sheehan, William B. J., M.B., 1928(Col).
Shepherd, Richard Le F., M.B., 1886(S).
Sheridan, John M. M.B., 1915(I).
Shine, Alexander V., L.K.Q.C.P., 1890(I).
Shipsey, Edward, M.D., 1873(I).
Shirwalkar, Raghunath D., M.R.C.S., 1917(E).
Shore, George W., *O.B.E.*, M.D., 1911(E).
Shorland, Edward P., M.R.C.S., 1864(E).
Sibley, Walter K., M.R.C.S., 1886(E).
Silverman, Sam, M.B., 1926(E).
Simpson, James S., M.R.C.S., 1909(E).
Simpson, William B., M.B., 1885(E).
Singh, Jaswant, M.B., 1927(E).
Sloane, Hans H., L.S.A., 1902(E).
Sloggett, Harry P., L.K.Q.C.P., 1887(I).
Sloper, John S., *O.B.E.*, M.R.C.S., 1913(E).
Smith, Alexander, M.B., 1921(S).
Smith, Algernon C. S., *M.C.*, M.R.C.S., 1913(E).
Smith, Hoyland, M.R.C.S., 1906(E).
Smith, John A. C., M.B., 1917(E).
Smith, Lindsay C., L.M.S.S.A., 1914(E).
Smith, Nathan, M.R.C.S., 1924(E).
Smith, William B. A., M.B., 1898(I).
Smyth, James, M.B., 1922(I).
Snodgrass, Kathleen R., M.B., 1921(I).
Sood, Ram P., M.B., 1925(E).
South, Richard E. E., M.R.C.S., 1890(E).
Speed, Henry A., M.R.C.S., 1876(E).
Spiller, Frederic W., L.S.A., 1883(E).
Stack, Mary J., M.B., 1922(I).
Stainer, Edward, M.B., 1897(E).
Stansfield, Frederick J., M.R.C.S., 1902(E).
Steavenson, William H., L.M.S.S.A., 1918(E).
Steggall, Septimus L. J., M.R.C.S., 1892(E).
Stephens, Charles, L.S.A., 1875(S).
Stephens, James B., M.R.C.S., 1903(E).
Stewart, Robert A., M.B., 1901(I).
Sthamer, Eduard F. A., L.R.C.P., 1903(E).
Strange, Arthur, F.R.C.S., 1892(E).
Strelitz, Percy, M.B., 1926(E).
Strong, Evelyn C. N., M.R.C.S., 1926(E).
Subbaramayya, Pappu, M.R.C.S., 1925(E).
Sullivan, Anne, M.B., 1923(I).
Sully, Albert M., M.R.C.S., 1887(E).
Summerhill, Thomas H., M.R.C.S., 1881(E).
Suzor, Jean R., M.B., 1884(E).
Swede, Oscar H., M.B., 1924(E).
Sweetnam, Herbert M., L.R.C.P. & S., 1885(I).
Swettenham, Albert W., L.R.C.P.S., 1897(S).
Swift, William J. C., M.R.C.S., 1874(E).
Sworn, Basil R., M.R.C.S., 1925(E)
Symonds, Henry, M.D., 1888(E).
Synge, Hon. (Mrs.) Ella C. S., L.S.A., 1900(E).

Tackney, James, L.R.C.P., 1927(I).
Tait, John T., M.B., 1922(Col).
Talaat, Abbass H., M.R.C.S., 1921(E).
Tanner, Albert E., L.R.C.P. & S., 1909(E).
Taylor, Alice, L.R.C.P. & S., 1904(I).
Taylor, Edward H. H., M.B., 1928(Col).
Teichelmann, Ebenezer, L.K.Q.C.P., 1887(E).
Telfer, James A. H., M.B., 1911(S).
Temple-Raston, Bertrand, L.M.S.S.A., 1925(E).
Tench, Charles G., M.B., 1893(I).
Te Water, Maria M., M.B., 1925(E).
Tha Richard, R. H. O., L.M.S.S.A., 1915(E).
Thane, Edgar H., M.R.C.S., 1885(E).
Thomas, David, M.R.C.S., 1884(E).
Thomas, Robert A., M.R.C.S., 1906(E).
Thompson, George M., M.D., 1882(E).
Thomson, John A., M.B., 1920(S).
Tighe, John M., L.R.C.P., 1895(I).
Tinsdale, George F. W., M.B., 1925(I).
Tobin, Thomas M., M.B., 1925(I).
Todd, John L., M.R.C.S., 1908(E).
Tothill, Gilbert M., M.R.C.S., 1924(E).
Townroe, Eugene D., M.R.C.S., 1903(E).
Trant, Hope, M.B., 1925(I).
Tratman, Frank, L.R.C.P., 1885(E).
Tremble, John M.B., 1911(E).
Triay, Aberlardo J., M.B., 1883(E).

Usborne, Hermione M., M.B., 1924(E).
Uttley, Kenneth H., M.R.C.S., 1925(E).

Van Buuren, Neville A. A., M.R.C.S., 1925(E).
Van Coller, Frederik A., M.B., 1920(E).
Van der Post, Herman, M.R.C.S., 1925(E).
Van Straubenzee, Clyde H., L.R.C.P. & S., 1894(E).
Vernon, Humphrey W., M.B., 1886(S).
Vernon, John J. D., M.R.C.S., 1885(E).
Vigne, Alfred, M.B., 1890(I).
Viljoen, Jacobus, M.R.C.S., 1925(E).
Vinrace, Edward D., L.S.A., 1883(E).
Vint, Edward T., M.B., 1892(I).
Waddy, John P., L.R.C.P., 1870(I).
Walker, Benjamin, L.S.A., 1887(E).
Wall, John, M.B., 1919(I).
Wallace, James M., M.R.C.S., 1912(E).
Wallace, Patrick J., M.B., 1926(I).
Wallace, Robert F. S., M.R.C.S., 1893(E).
Walley, Thomas B., L.K.Q.C.P., 1878(E).
Walsh, Arthur G., M.B., 1915(I).
Walsh, John V., M.B., 1921(I).
Walsh, Joseph C., M.B., 1917(I).
Walsh, Michael J., M.B., 1913(I).
Walsh, Teresa J., M.B., 1916(I).
Warburton, John R. N., M.R.C.S., 1914(E).
Ward, Oswald E., M.R.C.S., 1900(E).
Warke, Charles L., M.R.C.S., 1886(E).
Warnock, Robert, M.B., 1924(I).
Wassif, Nagib, M.R.C.S., 1927(E).
Watson, Albert D., L.R.C.P., 1884(E).
Watson, Anna, M.B., 1924(I).
Watson, Archibald, L.S.A., 1882(E).
Watts-Slater (Mrs.), Edith W. T., M.B., 1905(E).
Webb, Harry G., L.R.C.P., 1907(E).
Webner, Ralph A., M.B., 1925(I).
Weinberg, Norman, M.B., 1924(E).
Weir, Archibald, M.B., 1928(S).
Welch, Harvey H. V., M.B., 1910(E).
Welply, John J., M.D., 1876(I).
Welsh, Robert C., M.B., 1881(S).
Welton, Frank J., M.B., 1928(E).
Weston, Joseph T., L.R.C.P., 1885(E).
Wetherell, Marmaduke C., M.B., 1902(E).
Wharry, Arthur J., M.R.C.S., 1879(E).
Whelan, John, L.R.C.P., 1900(I).
White, Eva M., M.R.C.S., 1915(E).
White, Patrick W., M.B., 1915(I).
Whyte, John, L.R.C.S., 1885(I).
Will, Ella K., M.R.C.S., 1922(E).
Will, John K., M.D., 1882(E).
Williams, George H., L.R.C.P., 1884(E).
Williams, Horace J., L.R.C.P., 1907(E).
Williams, James A., L.S.A., 1896(E).
Williams, Margaret A., M.R.C.S., 1919(E).
Williams, Reginald F., *M.C.*, B.Chir., 1901(E).
Williams, Ronald M., M.R.C.S., 1927(E).
Willing, Charles E., M.R.C.S., 1928(E).
Wilson, Charles H., L.R.C.P. & S., 1906(I).
Wilson, Harry T. M., *D.S.O.*, M.R.C.S. 1904(E).
Wilson, James, M.D., 1879(E).
Wilson, Mary R., M.B., 1902(S).
Wilson, Thomas, M.R.C.S., 1883(E).
Wilson, Thomas, M.B., 1902(E).
Wintle, Colston, M.R.C.S., 1891(E).
Wise, Walter, L.S.A., 1883(E).
Wise, Walter F., M.R.C.S., 1910(E).
Wiseham, Beryl, M.R.C.S., 1921(E).
Withers, John S., M.R.C.S., 1882(E).
Wolff, Sidney, M.R.C.S., 1919(E).
Wong, Sik To, M.R.C.S., 1919(E).
Wood, Howard J. F., L.M.S.S.A., 1926(E).
Woodforde, William S. R., M.B., 1884(E).
Woodhouse, Sir Tom P., *K.C.M.G.*, *C.B.*, L.S.A., 1880(E).
Woods, Henry C., *C.B.*, *C.V.O.*, M.D., 1863(E).
Woods, Leo F. J., M.B., 1919(I).
Woolley, Thomas F., M.R.C.S., 1896(E).
Wright, Harold N., M.R.C.S., 1906(E).
Wright, Robert A., L.R.C.P., 1913(I).
Wynne, Owen W. J., L.R.C.P., 1909(I).

Yoffa, Annie, M.R.C.S., 1925(E).
Young, John, M.B., 1921(I).
Young, Richard W., M.R.C.S., 1886(E).
Young William, M.B., 1923(E).

Zaglama, Fuad W., M.R.C.S., 1921(E).
Zerolo, Thomas F., M.R.C.S., 1920(E).
Zidel, Jack S., M.R.C.S., 1928(E).
Zinomber, Louis S. V., M.R.C.S., 1923(E).
Zorab, Zorab M., M.B., 1896(E).

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

REORGANISATION OF THE MEDICAL PROFESSION.

THE Rumanian Chamber of Deputies, by 133 votes to 7, has passed the new Public Health Bill. The details fill a bulky volume, but the principal provisions may be summarised as follows:—

For the control of medical practice a college of physicians (*Colegiul medicilor*) will be established and only members of this college will be allowed to practise medicine in Rumania. A physician must not take part in any form of commerce, either directly or indirectly, nor must he have any occupation prejudicial to the prestige of the profession. The college will have one branch in each county and the central board of directors at Bucharest will be constituted from the presidents of the county councils. Physicians are forbidden to use any means of attracting patients which may lower their profession in the eyes of the public, but the college has the right to require the public prosecutor to take action against anyone who carries on medical practice illegally, and also against anyone who prepares and sells drugs without medical prescription. For discipline within the profession, the first tribunal will be the county council of the college. A practitioner may be defended by one of his colleagues, or by a solicitor. The sittings of the disciplinary council are public and their decision must be in writing. The court

of appeal consists of one judge of the Bucharest High Court of Justice, and four doctors appointed by the board of directors of the college. The penalties are as follows: (1) remonstrance; (2) remonstrance and suspension of eligibility for election to the county council for one to three years; (3) temporary suspension of right to practise; (4) removal from the register of the college.

THE PUBLIC MEDICAL SERVICES.

The Act distinguishes five groups of doctors in the public service, according to whether they are concerned with hygiene, healing, laboratory work, administration in cities and parishes, or forensic medicine. Specialists in any branch of medicine must produce evidence of having studied their branch for at least four years after graduation. The law recognises as specialists those who, before its proclamation, were university professors, lecturers, assistants, or senior hospital physicians, or worked as secondary doctors at a special section of a recognised hospital. Private doctors will only be recognised as specialists if they can supply documentary evidence of having worked in their specialty for at least five years.

In the public service the following ranks are established: junior physician, titular physician, physician-in-chief, principal physician, inspector-general physician, and consulting physician. As a rule, everyone must begin his public career as a junior physician, and must spend two years in this capacity. If by then he is deemed unworthy of promotion he remains in the same rank for a further year, and if he still does not deserve advancement he must leave the public service for ever. In exceptional cases a man may join the service as titular physician or physician-in-chief if he has served in a private hospital for two years and four years respectively and has especially good qualifications. Advancement is not a certainty in every case, but takes places according to merit. One must, however, spend at least two years as junior and four years as titular physician. The rank of inspector-general is reserved for the most prominent doctors and appointment is subject to the recommendation of a special commission. Their total number cannot exceed 30 in the whole country. If an inspector-general has shown a particularly useful and conscientious activity he receives on retirement the title of *medic consilier sanitar*. The new law considerably raised the grades. The old law knew four grades only, each rise bringing a 15 per cent. rise of the salary. The new law is more liberal and provides five grades, each with 25 per cent. rise, and the total increase of 125 per cent., together with several additional sources of incomes, ensures a very comfortable livelihood. At the age of 60 every physician may be pensioned at the suggestion of the administrative commission. At 62 all must retire without regard to years of service.

DENTISTRY AND OTHER BRANCHES.

The new law definitely settles the troublesome question of dental practice by declaring that dentistry can be carried on by duly qualified doctors or dental technicians who have specialised in stomatology. Those dental technicians who gained their right to practise before 1923 may continue their work without disturbance. Those whose licence was not recognised by the revision in 1924, if over 42 years of age, will have to pass qualifying examinations in December, 1930, while those under 42 will have to attend a regular course, lasting one year, in dental technique and pass the final examination. Only those technicians are justified in applying for admission to the courses who before 1923 had already eight years' practice (two years as apprentices and six years as assistants in laboratories). Those who have passed matriculation examination in a secondary school and attended some foreign high school for dentistry, and obtained a diploma after four years' study, may carry on dental practice in Rumania without further notice. Dental technicians, and also dental surgeons, are not allowed more than one consulting room.

Diathermy, quartz-light, and X ray apparatus may be owned and used by qualified doctors only. Likewise electrolysis and electro-cauterisation should be applied by physicians, and this exclusively medical work must not be done by barbers, masseurs, manicurists, chiropodists, or cosmetic institutes.

The new law puts a stop to brothels and all undertakings connected with the keeping of prostitutes. Henceforth licensed women will have to present themselves twice weekly for medical examination—in towns and cities at the venereal dispensaries, in small towns and villages by the parish doctors.

MENTAL HEALTH IN 1929.

REPORT OF THE BOARD OF CONTROL.

Mental Disorders.

ACCORDING to the sixteenth annual report[1] of the Board of Control there were at the opening of the present year 142,387 notified insane persons under care in England and Wales. This was an increase of only 1307 on the preceding year—about half the average increase—but the Board do not feel that this low figure reflects any real diminution in the incidence of mental disease. It is mainly due to a high death-rate—8·04 per cent.—and also, to some extent, to the increasing shortage of beds, producing a tendency to retain manageable cases in poor-law infirmaries. The margin of accommodation is perilously small, and causes the Board considerable anxiety. They are, however, happy to record that the visiting committees are showing themselves alive to the situation, and that many important extensions were approved during 1929. Brookwood, Glamorgan, Hanwell, and Stafford are building admission hospitals, and Brighton is purchasing a site for one. Banstead, Glamorgan, Long Grove, and Plymouth are building nurses' homes and Barnsley Hall, Bracebridge, Norwich, and Mid-Wales are extending their accommodation.

The total expenditure on the upkeep of county and borough mental hospitals and their patients for the year ending March 31st, 1929, amounted to £7,981,257. The Board no longer publish comparative tables of maintenance rates, for they feel that these are deceptive. They point out that a low maintenance rate is just as likely to spell bad treatment as good management.

HEALTH AND RECOVERY-RATES.

The total number of discharges during the year was 10,497, of which 6997 were discharged as recovered, giving a general recovery-rate for the year of 31·73 per cent., slightly below the average. There were 1216 patients under treatment for tuberculosis at the beginning of 1929; the incidence is highest generally in the northern hospitals, except in Yorkshire, and lowest in the south-eastern counties,

[1] H.M. Stationery Office. Pp. 103. 1*s*. 9*d*.

except Brighton Borough. The figures for the mental hospitals follow closely those for the general population of the areas. During the year the incidence-rate rose 0·5 per cent., and for the first time, the male exceeded the female notifications. The increase seems to have followed the wave of influenza in the spring. In spite of the number of notifications, there were only 1209 tuberculous patients at the end of the year. There was a reduction of about 45 per cent. in cases of the enteric group, and a slight decrease in dysentery. Exhaustive searches are made for the source of these outbreaks but, as the report points out, hospitals not yet provided with laboratory facilities are at a great disadvantage in this respect. There was a considerable increase in the number of cases of erysipelas, principally among women.

Of the total of 1730 patients admitted to licensed houses during the year 43·2 per cent. were voluntary admissions, while 699 voluntary and 610 certified patients were admitted to registered hospitals. In poor-law institutions there were 15,557 certified patients on the first day of the year, but this, of course, is by no means the total of mental cases in these institutions. So far, only one visiting committee has made arrangements for suitable mental patients to be received in a poor-law institution. The Board deprecate the practice of some areas whereby all patients with mental symptoms who need assistance from the rates are sent in the first place to observation wards, which are inadequately fitted and staffed for mental treatment. The report quotes two cases illustrating the dangers of delay in securing effective hospital treatment, and urges that all such cases should be sent direct to a mental hospital.

Mental Deficiency.

It is now possible to secure continuity of treatment and care for the mentally defective by dealing with them as mentally disordered and not as destitute persons. The old confusion is by no means yet cleared away, but the Board hopes to see better things before long. On the subject of adapting poor-law institutions for mental defectives the report makes three comments:—

(1) A few of the better institutions could, they think, be adapted at reasonable cost and might serve as the nuclei of colonies if sufficient land could be acquired; but most of these will be needed for other purposes.

(2) A number of institutions could be adapted for one sex only. The Board recommend that these should be used for the older lower-grade cases who do not appreciate their surroundings, and can only be employed in simple domestic work. This institution should, however, be adequately staffed and should be ancillary to the main colony in the area.

(3) Young, trainable, and employable defectives should only be kept in a poor-law institution as a temporary measure while the colony is being built.

Even if it were possible to use all the beds in poor-law institutions hitherto occupied by defectives, roughly 30,000 cases, mostly young and trainable, would still lack accommodation. Hardly a day passes without an appeal from some local authority for accommodation for an urgent case, and the Board has to reply that no vacancies exist. The number of beds provided by local authorities increased by 1376 during 1929. The report gives a list of authorities who have made some provision, and is able to say that an increasing number of authorities are realising the urgency of the problem, although the provision is still far short of the requirements. There has been an increase in hostel accommodation for mentally defective men and women who are able to be partly self-supporting outside an institution. Hostel treatment provides help and guidance with remunerative daily work, and leads to the possibility of licence, or the guardianship of carefully chosen employers.

STERILISATION.

The report discusses the problem of the marriage and sterilisation of defectives. The Board believe in the education of the public as to the nature and needs of defectives who remain at large, and in careful guardianship. They think that many disastrous marriages might be prevented if the local authority were made guardians and if defectives on licence were visited regularly by trained visitors. They still urge the prohibition of the marriage of defectives under statutory care. While maintaining their view that sterilisation will not solve the problems of mental defect and will do little to alter its incidence, they admit that there are cases in which it might be advantageous and that, if the claims of its advocates are often exaggerated, the condemnation of its opponents rests on an equally unsubstantial foundation.

ASCERTAINMENT.

The increase in ascertainment has continued; at the end of last year 71,439 defectives had been reported to the local authorities, and the ratio per 1000 had risen during the year from 1·69 to 1·81. The returns, however, still vary in different areas from 5·82 to 0·18 per 1000 of the population. The Board confidently expect a large increase in 1930. The Board urge the importance of employing specially trained medical men to make the survey; in these days it is most important to distinguish between those who are unemployed because of their mental condition and those who are capable of work if opportunity offers. For the improvement of ascertainment the Board suggest the following measures:—

(1) Closer coöperation between the various committees of the county and borough councils.

(2) Closer coöperation between the statutory committees for the care of defectives, the managers of Home Office schools and reformatories, the prison authorities, and the remand homes.

(3) Closer coöperation with voluntary and charitable homes and societies.

(4) The appointment of trained officers to carry out the duties of ascertainment and supervision and to develop and supervise guardianship.

(5) The appointment by the local authorities of medical officers with special knowledge and experience of mental defectives.

SUPERVISION.

There were 22,706 cases under statutory supervision at the beginning of this year, and 20,032 under voluntary supervision. This is a gratifying increase, but local authorities still vary extraordinarily in their activities in this direction. The Board urge the appointment of trained officers, the provision of occupational and industrial centres, and of home training, and the full use of carefully selected voluntary visitors in order to render supervision really efficacious.

There are now 161 occupational and industrial centres, which are doing very good work, but the Board think that guardianship as a means of care is not increasing as rapidly as is desirable.

After a review of the results of discharge and licence during the past five years they conclude that discharge has been too often fortuitous instead of dependent on the ability and temperament of the defective and his home circumstances. Most of the successful cases were only discharged after a graduated process of re-education and stabilisation ending in prolonged periods of licence. The growing practice of sending out defectives on long licence seems to be satisfactory, and the Board deprecate any pressure to discharge these cases. It cannot be argued that because defectives have done well under licence they

will do equally well on discharge; they need the forbearance and supervision available on licence, and complete liberty in a competitive labour market often means social disaster.

Varia.

As usual, the details of research work in mental hospitals will be set out in the second part of the report. There has been a welcome increase on previous years, including two reports from mental deficiency institutions. A research chemist has been appointed to the staff of Cardiff City Mental Hospital. Special observations are still being made on cases of encephalitis lethargica. The number under care has fallen from 260 in 1927 to 182 in 1929, but these figures do not represent the whole toll of the disease.

Good progress has been made during the year in the provision of nurses' homes, a policy which the Board regard as an essential part of the modernisation of mental hospitals. Modern nursing demands an educated nurse, and no pensions scheme or any advantage of the kind will make up for unsatisfactory conditions of living. The Board also remark on the high level of qualification which has been demanded of medical officers appointed during the year. There is, however, a great shortage of doctors properly trained in mental deficiency. The Board do not want to add to the already alarming number of special diplomas, but they would like to see courses of post-graduate training available at one or two colonies within easy reach of a teaching hospital.

The report comments on the foreign study tours organised by the Royal Medico-Psychological Association, and expresses a hope that the League of Nations health organisation—which has hitherto ignored the mental hospital service in this respect—will in time recognise the importance of interchange in the sphere of mental disorder.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1929 statistics of five districts which serve in varying degrees as dormitories of London:—

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Willesden U.D. .. (177,973)	16·5	11·7	1·01	1·35	2·4	1·9	61/32	34	4·1
Tottenham U.D. .. (155,000)	16·5	11·9	0·91	1·26	3·4	1·9	63/28	25	1·6
Ilford B. .. (112,489)†	15·6	9·7	0·71	1·24	2·0	2·0	49/27	20	4·0
Ealing B. .. (104,000)	14·7	12·4*	0·96	1·44	2·8	2·3	48/22	—	2·0
Hornsey B. . (88,450)	13·8	12·7	0·82	1·62	3·0	1·6	55/30	21	4·1

Stillbirths per 100 live births: Willesden 2·7, Tottenham 3·4, Ilford 2·8, Ealing 2·7.

* Standardised rate 11·3.

† After deducting populations of Claybury and West Ham mental hospitals.

Willesden.

Dr. George F. Buchan describes the results of the first six months' work of the Council's clinic for the early diagnosis of cancer up to March 31st, 1930. Of the 52 patients who sought advice, 18 were in need of active treatment for various conditions and 12, including one definite case of cancer, of operative treatment for conditions regarded as forerunners of cancer. The coöperation of the hospitals for treatment has been secured and the press has given wide publicity to the importance of early diagnosis. A coördinated effort is also needed in Willesden to mitigate the results of rheumatic fever, the full benefit of which, however, can only be expected later from the prolongation of working life and the decreased death-rate from heart disease among those attacked. The diphtheria immunisation clinic, established in May, 1927, has come to an end, owing to the lack of parental support. Only two school-children and seven children under 5 years of age attended during 1929. There were 47 notifications of small-pox of the mild type. One death occurred in a man of 63 years from encephalomyelitis, which has aroused medical interest, as this complication has occurred after vaccination, measles, and other diseases. The clinical and pathological details have been published in THE LANCET (1930, i., 566). Nine deaths were attributed to infectious diseases of the nervous system. No deaths from typhoid fever were recorded.

Of the 2714 children born in Willesden, 34·7 per cent. subsequently attended the welfare centres; and the number of births to expectant mothers who attended the antenatal clinic was 564. Under the council's scheme for hospital treatment for children under 5 years, 80 were successfully operated on for tonsils and adenoids and 11 were treated for marasmus with one death. In the endeavour to cope with maternal mortality, the council as from Jan. 1st, 1930, provide sterilised accouchements sets (free, if necessary) and accept responsibility for the fee of a consultant or of an anæsthetist, when needed for a confinement case. Over 4500 mothers attended the three schools for mothers, which had useful programmes of needlework classes and competitions, and lectures, demonstrations, and visits of health interest. Before the war the percentage of verminous school-children discovered at routine inspection was over 20; since the war the figure has come down year by year to 4 in 1929. The scheme for the dental treatment of the elementary school-children is "admittedly incomplete." After an elaborate and complete system of inspection 11,217 out of 15,749 children were found to need treatment, and yet only 2171 received treatment at the dental clinics.

Out of 48 samples of milk examined three were found to contain tubercle bacilli. On two farms tuberculous cows were slaughtered under the order and on the third farm the investigation had negative results.

Tottenham.

Dr. David C. Kirkhope says the outstanding problem is still the housing of poorer families at rents within the compass of their incomes. No subsidised houses were erected during 1929. There were six mild cases of small-pox—the first since 1910. The treasurer's estimate of the population is 168,000. Diphtheria was more prevalent than in 1928—562 cases with 30 deaths (case-fatality 5·3 per cent.). Parents show little disposition to take advantage of immunisation facilities offered. In the endeavour to fill the gap between infancy and school entrance, provision has been made in the next three-years programme for two nursery schools and two nursery

classes. Ionisation continues to give successful results in otorrhœa. Cases are coming up for treatment at an earlier and more amenable stage and "diastolisation" is proving valuable for acute and chronic inflammation in the nose and in thus preventing deafness. An audiometer is to be procured in order to measure accurately the amount of defect and the degree of recovery after treatment. The 32 Tottenham children at the school for the deaf include 19 totally deaf, and it is pointed out that such totally deaf children with normal brain power, whose attendance is regular, should leave school with intelligible speech and useful lip-reading and able to express their thoughts and receive the ideas of others, after starting school life speechless and languageless.

Ilford.

Dr. A. H. G. Burton reports a considerably increased prevalence of diphtheria. There were 305 cases and 16 deaths. The occurrence of 123 cases on the L.C.C. Becontree estate was an illustration of the fact that in these days of carriers good housing does not give immunity. Since November, 1929, 1039 children have been immunised in this neighbourhood. The accommodation at the isolation hospital has been strained and 28 acres of land have been purchased and a layout of the proposed extensions is shown on a plan. The use of antiscarlatinal serum has reduced the duration of stay in hospital. In 1909 the average stay for scarlet fever was 44 days and in 1929 it was 31·3 days. Most cases who receive the serum early can be discharged in three weeks without increased risk of complications or return cases. The school medical service has been extended by the provision of an orthopædic scheme and the appointment of an additional dentist. The open-air school for 100 children began work on Jan. 29th and has already proved its value. The maternity home, opened in 1926, admitted 481 patients and already needs extension. Dr. Burton recommends the provision of a new ward block for difficult emergency cases and a new antenatal clinic also in a separate block. There are six cowsheds on the register. In 1927 Major J. A. Boseley was appointed veterinary inspector for the Milk and Diseases of Animals Acts. During 1925 five cows (two in milk) at the farm attached to a public institution were reported as suspect. Three had advanced tuberculosis and two chronic cough and other signs. All were slaughtered.

Ealing.

Dr. Thomas Orr reports that a scheme is in operation under which every child from birth to school-leaving age will soon receive appropriate treatment for crippling defects. During the year the orthopædic surgeon on his monthly visits to the clinic saw 73 school-children and 87 children under school age. The demand from the parents is so immediate as to necessitate increased accommodation. Operative treatment in hospital, if needed, is provided at Stanmore. The Minister has made Ealing Town Council the supervisory authority under the Midwives Acts and also the authority under the Nursing Homes Registration Act, 1927, thus reversing the action of the Middlesex County Council in refusing to delegate. Dairy premises have been greatly improved and milk in sealed bottles is only allowed to be sold from general stores if it is kept in a cool place. The municipal day nursery has been closed owing to the small number of children seeking admission and the relatively high cost per attendance. The mothers were going out to work and earning 4*s*. to 4*s*. 6*d*. per day, of which they paid 9*d*. for the maintenance of each child at the nursery, leaving the balance of 4*s*. 9*d*. for the average cost of each attendance to be paid out of the rates. It would have been better, Dr. Orr points out, to make a grant to the mother to look after her child at home, but there is no legal power to make such a grant. There is little demand for nursery schools in the borough and the Education Committee admit children between 4 and 5 years of age to infants' departments when this course is desirable. The latest school, now nearing completion, is of the "Derbyshire" open-air type, and two other new schools and a department of similar construction are to follow.

Hornsey.

Dr. R. P. Garrow reports that the new houses were all subsidised—73 houses and 12 flats (private enterprise) and 33 municipal flats. Thirty families, including 148 individuals, were moved from overcrowded houses during the year and 33 more were to be moved in April, 1930. The inspectors take steps to prevent recurrence of the overcrowding in the vacated houses. The milk consumed in the borough is estimated at half a pint per head of the population per day. Two roundsmen were fined for selling milk in bottles not filled and closed on registered premises. The municipal midwife attended 136 births and earned £200 16*s*. in fees. The mothers took so much advantage of the maternity and child welfare dental sessions that it was not possible to treat children under 5 years. Dr. Garrow thinks many of the school-children show a lack of robust health, pointing to poor feeding in infancy and childhood. Mr. A. R. Friel treated successfully 70 cases of otorrhœa at his clinic. A local orthopædic clinic is to be established in connexion with the Royal National Orthopædic Hospital and its country branch at Stanmore. A Church of England school, which had been placed on the Board of Education List B, has been entirely reconstructed and extended by the generosity of Mr. David Greig, first freeman of Hornsey (1929) and is now well up to modern requirements.

REPORTS OF SCHOOL MEDICAL OFFICERS.

—	No. on roll.	Average attendance.	Routine inspection.	Special exams. and reinspections.	Percentage of defects.
Liverpool ..	—	—	42,266	61,029	17·2
Kent	75,736	—	24,268	25,814	15·7
Leicestershire ..	38,019	33,851	10,535	8,907	15·3

Liverpool.

Dr. A. A. Mussen reports advance towards the full development of the service; with the opening during the forthcoming year of two day open-air schools, and the orthopædic and other clinics, the only outstanding requirement is the extension of the dental scheme. Additional clinics for the treatment of minor ailments including defective vision and dental work are to be opened at an early date, when the facilities as a whole will be distinctly above those provided elsewhere. For tonsils and adenoids there is a special clinic with 12 beds; hæmorrhage occurred in about 7·9 per cent. of the cases, in a few after discharge from the clinic. That there are so few is due to the care given to after-treatment at home; printed instructions are sent to the parents about the need of rest for three days, and the nurse impresses upon them the need of carrying out instructions faithfully. It seems that these instructions are unheeded in 30 per cent. of the cases; for instance, a boy played in a billiard match on the night after his discharge and, it is said, blamed the clinic for his defeat. Advice as to food is similarly disregarded. In otorrhœa, treatment by zinc ionisation is giving improved hearing and freedom from recurrences more than other methods. Dental facilities are improving with the appointment of an additional dentist. Orthopædic clinics and hospitals are being adequately provided. Ophthalmic work is thoroughly carried out, including the much needed reinspection of those who fail to wear their glasses, and advice to the parents of myopic children about to leave school. Some of the medical staff have carried out an investigation into the hereditary transmission of Leber's disease, hereditary optic atrophy, a kind of research

for which school doctors have special advantages. Records of all cases of defective vision are kept, and from these it was found that all the cases of this disease in Liverpool could be traced back to one blind ancestor; transmission followed Mendelian laws, and was not sex-limited as is commonly thought. The onset was earlier than described by Leber. Accommodation for exceptional children, including stammerers, is more nearly adequate in Liverpool than in most other areas; a fine senior M.D. school has just been added. Squint is treated in pre-school children, a most valuable provision, but otherwise hardly any mention is made of this age-group.

Kent.

Dr. Alfred Greenwood reports a year of smooth working, with an increase in the total number of examinations. There is little mention of extended facilities for treatment or accommodation for exceptional children, and there is still no open-air school belonging to the county authority. The only special school noted is one for 36 mentally defective children at Tonbridge. Dental work shows progress, especially in the coöperation by the parents; in some schools the percentage of acceptances was 100, and fitting tribute is paid to the teachers. The dental trophy awarded to the school at Goodnestone shows the keen interest taken by remote villages. Mr. F. J. Saunders, L.D S., says the increase of parents accepting dental treatment has so occupied the staff that inspections are only half what they were three years ago; the other children only receive dental treatment when it is applied for, usually as a result of toothache. Mr. L. F. Hayes, L.D.S., remarks that the centres are unable to deal with the whole school population, even when working to capacity. He stresses the value of the dental habit; now that almost the whole life of the individual is covered by dental schemes under (1) child welfare centres, (2) school dental centres, (3) dental benefits under the Insurance Acts, there can be little excuse for dental unfitness. The criterion of success in school work is the percentage of children leaving school dentally fit. Dr. Greenwood adds that rather fewer children are having dental treatment for the first time, and more are re-treated, and that this is inevitable unless the dental staff is expanded. The oculist, Dr. J. W. Fox, speaks of the value of covering the "good eye" when the other is squinting or amblyopic. He cites several examples of benefit, in some of which the vision in the weak eye was raised from 6/60 or less up to 6/9 or more. The disadvantages are trivial, and failure is due to not persisting for the necessary minimum of six months; the process should then, he says, be continued during alternate months for another year. Included in the report are the results of some special inquiries by members of the staff. Dr. Dorothy Gallie deals with faults in clothing and footwear. Dr. H. J. Phillips traces some connexion between rheumatism and nose and throat conditions; incidentally he notes that the results of operation were unsatisfactory in 24·4 per cent. of cases. Dr. J. Selfe attributes much debility to incorrect feeding. Dr. F. Wolverson finds evidence that the midday meal brought from home is inadequate; if a school canteen cannot be provided, something should be done to augment the fare by the provision of cocoa or (far better) milk. Dr. W. Lessey describes some types of neuropathic child. Dr. S. A. Tucker's notes on enuresis are of general interest.

Leicestershire.

Dr. J. A. Fairer directs attention to three links in the coördination of infant welfare and school work: (1) Community of staff. (2) Arrangements for transfer of records, especially of the physically defective. (3) Extension of ophthalmic treatment to all necessitous pre-school children. Elsewhere he notes a fourth—namely, infant welfare exhibitions, of which two have been arranged by the superintendent school nurse, and attended by many of the elder school girls to whom she also gives oral instruction. There are in the county no nursery schools, it is true, but the need for them is not such as it is in crowded towns. Dr. Fairer is impressed with the importance of after-care, especially in the case of crippled children whose surgical appliances need constant revision; much is hoped from the formation of local committees associated with the rural community councils. By such means cripples and other defective children of pre-school age would be looked after better. Of the orthopædic work in the county he speaks with appreciation; it includes ascertainment, orthopædic hospitals, clinics and agencies like the Loughborough Cripples' Guild. Massage, electrical treatment, exercises and re-education, ultra-violet radiation and surgical appliances are all provided, the only missing feature is the special P.D. school, the establishment of which in rural areas undoubtedly presents difficulties. Mr. Percy Ashton, L.D.S., has made an investigation of the condition of the teeth in children leaving school; 85·6 per cent. of the children examined had sound permanent teeth, 39 per cent. being naturally sound, and the remainder rendered sound by dental care. The treatment of defective vision is carried out by Dr. Constance Walters, who has made a special inquiry into myopia. It was found that up to five dioptres the incidence of each grade rose steadily with age; above five dioptres this did not hold, probably because the higher degrees of myopia are due to congenital defect. Myopia was not discovered in pre-school children, but diagnosis at this age is difficult. Dr. Walters has also investigated the relation of visual troubles to defective lighting in schools; the percentage of children wearing glasses or showing symptoms of eyestrain was markedly greater in the worse lighted schools, 19·4 against 12·3. Dr. Mary Weston has studied the causes of fatigue in secondary school girls. The hours per week devoted to specific school activities were noted and features of the home life also considered. It was found that there were very wide variations in both groups; hours given to class work and preparation amounted to 31 at some schools for girls of 14, and only 20½ at others. Some girls got 11½ hours sleep at night, some only 7½. Dr. Weston regards concerted action by parents, head teachers, physical training instructors, and doctors as seriously needed.

MENTAL HOSPITAL REPORTS.

THE WEST SUSSEX COUNTY MENTAL HOSPITAL at CHICHESTER had 877 patients on the books on Dec. 31st last, exactly the same number as the previous year. The recovery-rate was 31·8 per cent. and the death-rate 7·52 per cent. The hospital suffered from influenza, enteric, scarlet fever, and tonsillitis; the medical superintendent remarks that overcrowding must have contributed to these epidemics to some extent. The dietary has been improved. Leave has been granted freely, and on an average 50 patients have had parole within the grounds and 29 more outside. The medical superintendent thinks that there has been a decrease in the public fear of mental hospitals and quotes three interesting cases to show the demand for treatment. The consulting surgeon performed three operations and the consulting rhinologist one. An advanced case of general paralysis was treated with malaria at the Hants County Mental Hospital and showed some physical improvement. The hospital already has an X ray plant, and ultra-violet light is to be provided when the new admission hospital and treatment centre is completed. The visiting commissioner suggests the appointment of an occupations officer. Six nurses and three attendants obtained their R.M.P.A. certificate during the year.

The STAFFORDSHIRE MENTAL HOSPITALS' BOARD have three hospitals under their care. At STAFFORD there were 1042 patients resident at the end of last year and the overcrowding has become accentuated. Plans for an admission hospital have been approved, but building has not yet been commenced. The recovery-rate for the year was 33·6 per cent. and the death-rate 8·07 per cent. General paralytics have

been treated by sulfarsenol and biscam; tryparsamide has been abandoned in favour of these preparations as they are much less toxic and give better results. In the laboratory a good deal of work has been done on bacterial toxins, and the presence of hæmoglobin reductases in exotoxins of certain coliform organisms has been established. The metabolism of epilepsy and primary dementia has been investigated biochemically. One ward on each side and the isolation hospital, which is occupied by men, are administered on the "open door" principle. Three men have full parole and two women and 33 men are free within the estate. The general health has been good, except for three cases of erysipelas and 17 of tuberculosis. Women nurses are not employed on the male side. Five attendants passed the final examination of the R.M.P.A. during the year.

At BURNTWOOD there were 940 patients in residence on Dec. 31st last, and consequently considerable overcrowding. It is hoped to build an admission hospital very soon. The recovery-rate was 35 per cent. and the death-rate 9·88 per cent. No less than 78 per cent. of the discharged patients had preliminary periods of trial, many of them with money grants. There was a small outbreak of Flexner dysentery, and the tuberculosis rate is high, as the patients come from a densely populated area. Several operations have been performed, and X ray examinations are carried out by arrangement with a local hospital. Raffia and rug-making have kept a number of patients occupied. A trained laboratory assistant has been appointed, and a number of pathological examinations have been made. About 10 per cent. of the male patients have parole and two wards each side are conducted on the open-door system. The visiting commissioner urges the provision of a clinical room for each ward. Two dental surgeons visit fortnightly. Four attendants gained the R.M.P.A. certificate during the year.

At CHEDDLETON there were 1128 patients at the end of last year. The medical superintendent notes a definite increase in the number of depressed middle-aged male cases admitted—the men whose services are first dispensed with when trade falls off and orders are few. In 95 per cent. of the fatal cases post-mortem examinations were made. The Wassermann reaction has been tested in all new admissions—i.e., 233. Of these, 24 men and 5 women gave a positive result; 20 men and 3 women had general paralysis. Malarial treatment is given to all who show a positive serum. It seems to be the first rigor which is the only effective one, and any spirochætes that survive the first rigor can stand any number of subsequent ones. Of the cases treated by malaria during the last seven years, roughly one-third recovered, one-third were arrested, and one-third were not improved or died. A searching investigation has been made into the possible reasons for the high percentage of tuberculosis in the hospital. The medical superintendent declares that tuberculosis can be abolished from mental hospitals if the public choose; it is all a question of money, for the cases must be properly segregated. There were 31 cases of dysentery in the hospital during the year, with two deaths. The medical superintendent is anxious to have an X ray installation. Parole outside the estate is given to 60 men and 21 women and within the grounds to 30 men and 5 women; three wards on each side are "open door." There are a number of children in the hospital, who are taught with great care; an occupational organiser visits from time to time.

The HERTFORDSHIRE COUNTY MENTAL HOSPITAL at ST. ALBANS had 881 patients at the end of last year. The recovery-rate was 28·6 per cent. and the death-rate 7·19 per cent. Post-mortem examinations were made in 48 out of the 71 fatal cases. A male annexe has been opened for bedridden men and has slightly relieved the overcrowding. A nurses' home was opened in January, and there are plans for providing another 350 beds. The general health was satisfactory except for a few cases of dysentery. Eight patients only are suffering from tuberculosis. General paralysis has been treated with tryparsamide, and two cases have been given malarial inoculation. Dental treatment was given to 58 men and 81 women and an organised effort was begun during the year to tackle the problem of eliminating septic foci. An ear, nose and throat surgeon has been appointed, and visits monthly. Ten operations were performed during the year. There is a physical drill class for men and a handicraft class for women, and the canteen is running successfully. Many routine investigations were carried out in the laboratory, which also does some work for the county mental officer of health. Eight men and eight women have parole beyond the estate, and 26 men within the grounds. The visiting commissioner suggests the desirability of installing X rays, ultra-violet rays, continuous baths, and cinema. No female nurses work on the male side. Six nurses and two attendants obtained their certificates during the year.

The report of the DOWN COUNTY MENTAL HOSPITAL is illustrated with a number of photographs, including an aerial view. There were 774 patients on the books at the end of last year. The recovery-rate was 34·3 per cent. and the death-rate 9·5 per cent. The latter shows a considerable increase on account of influenza. Schemes for supplying electromedical and hydrotherapeutic installation, verandas, and shelters have been approved. Rooms have been adapted for occupational therapy with great success. There was a great deal of paratyphoid, coincident with a widespread epidemic in the neighbourhood, and there was an outbreak of swine fever in the farm at the same time. Four attendants and six nurses obtained the R.M.P.A. certificate during the year.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 6TH, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 106 (last week 99); scarlet fever, 1411; diphtheria, 1074; enteric fever, 82; pneumonia, 440; puerperal fever, 36; puerperal pyrexia, 92; cerebro-spinal fever, 7; acute poliomyelitis, 24; acute polio-encephalitis, 2; encephalitis lethargica, 10; dysentery, 10; ophthalmia neonatorum, 108. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 9th–10th was as follows: Small-pox, 216 under treatment, 4 under observation (last week 209 and 5 respectively); scarlet fever, 1449; diphtheria, 1671; enteric fever, 31; measles, 135; whooping-cough, 104; puerperal fever, 27 (plus 14 babies); encephalitis lethargica, 119; "other diseases," 35. At St. Margaret's Hospital there were 16 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 10 (1) from measles, 8 (2) from scarlet fever, 9 (1) from whooping-cough, 14 (7) from diphtheria, 50 (11) from diarrhœa and enteritis under two years, and 10 (6) from influenza. The figures in parentheses are those for London itself.

The deaths from enteric fever outside London occurred at Northampton and Cardiff. Liverpool reported three deaths from measles and 2 from diphtheria. Four deaths from diarrhœa were reported from Liverpool, 3 each from Birkenhead and Newcastle-on-Tyne, 2 each from Leicester, Manchester, Middlesbrough, and Swansea.

The number of stillbirths notified during the week was 264 (corresponding to a rate of 38 per 1000 births), including 44 in London.

ENLARGEMENT OF BURTON INFIRMARY.—Extensions to Burton-on-Trent General Infirmary are being made at a cost exceeding £17,000. The work includes an enlargement of the out-patients' department, and the erection of a new X ray department with the necessary accessories, a casualty ward with a new dispensary, a throat and ear department, and improved accommodation for nurses.

CORRESPONDENCE

POSTURE IN HEALTH AND DISEASE.

To the Editor of THE LANCET.

SIR,—May I return to your report [1] of an address on this subject recently given by Miss M. Forrester-Brown to the London Association of the Medical Women's Federation. This report interested me greatly, but in view of the conclusions arrived at by no less a scientist than the late Rudolph Magnus, I am surprised to note that it attributed to Miss Forrester-Brown the following statement: "The position of the head is relatively unimportant in connexion with good posture, for the reflex motor system is at peace provided the eyes are horizontal." Now Magnus, after 14 years' experimentation, arrived at the opposite conclusion, and the details of his work are available to all of us through your columns.[2] It is significant that Sir Charles Sherrington made the "central control" discovery of Magnus the subject of a speech when President of the Royal Society. As the subject of posture in health and disease is of vital importance to every doctor, and as Miss Forrester-Brown has indirectly thrown out a challenge to Magnus and put a shadow of doubt into our minds, may I ask her to give us details of the scientific experimentation which has led her to the very opposite conclusion to that which was reached by Magnus?

I am, Sir, yours faithfully,

Bolton, Sept. 11th, 1930. M. DOUGLAS, M.B.

THE MEDICAL TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—It is really very difficult to express oneself politely, although I do not feel in the least degree acrimonious, when one has to deal with statements such as those of Dr. Todd, for they have their origin in scientific ignorance, verbal inaccuracy, and gross misrepresentation. These are capital offences from an intellectual point of view; and, as with all capital offences, they must be expiated. Moreover, Dr. Todd has advanced no extenuating circumstances to account for his failings: indeed, in his present letter (THE LANCET, Sept. 13th, p. 611) he makes matters worse.

With regard to his reference to the correspondence that has taken place in respect of his claim for priority in the use of lead selenide in the treatment of cancer, you would not have space for the private letters, much as I should like to publish them; I will, therefore, simply quote a short letter that I wrote to you on March 19th, 1927, a week after Dr. Todd's first note (THE LANCET, March 12th, 1927). The letter runs:—

> "I have been interested in the brief account by Dr. A. T. Todd of the initial results obtained in some of the cases of malignant disease treated by him with "lead-selenium colloid" (THE LANCET, March 12th, 1927, p. 575). The possibilities of a combination of these elements occurred to me, and doubtless to many others, long ago; and, as a matter of fact, our physical chemists had no difficulty in making an excellent colloid of lead selenide. But what will ultimately prove to be the most useful preparation of lead no one can foretell at the present time. Since many preparations of lead will probably be found to affect to a greater or lesser degree malignant neoplasms, what are really needed are comparative studies in regard to a large number of combinations rather than isolated observations of one particular preparation. This is the line our own clinical investigations have taken."

[It was not in respect of this letter that Dr. Todd wrote to me, but in connexion with what occurred in London in 1928, and I shall quote what I then said about Dr. Todd directly.]

In any case it would be puerile for us, who have progressively made and tested some hundreds of preparations of lead colloids to claim any priority beyond that of the use of colloidal lead and colloidal lead compounds in general for the treatment of cancer. However, for the information of Dr. Todd I may say that we commenced the manufacture of lead selenide in October, 1926, and in a private report dated Jan. 10th, 1927, from Prof. Lewis's laboratory for circulation among the staff of the Liverpool Medical Research Organisation, the preface to the description of the preparation of this compound contains the words:—

> "... it was thought by the clinical workers that a compound of this element [selenium] with lead might repay clinical investigation ... As far as is known a colloidal solution of this compound has not been prepared before, and the details are therefore recorded."

We found, as I have said before, that this preparation is of little value in comparison with other preparations. I give the above quotation to show that in the circumstances I was not ungenerous when I subsequently published at Dr. Todd's request in the *British Medical Journal* (July 7th, 1928, p. 35) the following remark in support of his claim to have worked independently in this connexion:—

> "... the work at Bristol, although based on our work in Liverpool, has been conducted entirely independently ..."

I should like to inquire in this connexion exactly why in his present letter Dr. Todd says "that the system as described [by Dr. Todd] has been originated here from the work of others and ourselves and owes nothing more to him [W. B. B.]," in view of the fact that he commences his first publication (THE LANCET, March 12th, 1927, p. 575) with the following words:—

> "The article published by Prof. Blair Bell on the action of colloidal lead on cancer (THE LANCET, 1925, ii., 793) suggested independent research."

His second communication ("Chemotherapeutic Researches on Cancer," Arrowsmith, 1928) starts in a similar fashion:—

> "The promising results of the action of colloidal lead on cancer claimed by Prof. Blair Bell in his article of 1925 determined me to experiment independently, a part of the attraction being a study of the resultant blood changes. We all know the results of his treatment now, but at the time stated proofs were not nearly so complete. The results themselves ... encouraged the hope that colloidal lead would be of use."

[Of course, our first publication, never mentioned as far as I know by Dr. Todd, appeared in 1922.]

Now, Sir, finding these acknowledgments fatal to his pretentions, Dr. Todd has shifted his ground, or rather turned a complete somersault. He now states that in the treatment of cancer with lead selenide the lead is inert and is merely used by him "as a vehicle for selenium" (!) I confess that such an astounding assertion paralyses my powers of commentation. Is it necessary to add that selenium was extensively tried in the treatment of cancer and found wanting, long before Dr. Todd took it up? Why did Dr. Todd not immediately write dissociating himself from the views expressed in your leading article (THE LANCET, August 23rd, p. 406), where you clearly attribute his results to lead?

[1] THE LANCET, 1930, i., 32.
[2] THE LANCET, 1926, ii., 531 and 585.

The interesting announcement that Dr. Todd intends to give up lead in the treatment of cancer in favour, I suppose, of selenium, already discredited, should be noted by those who imagine that patients are treated in Bristol by the method introduced by us.

I am, Sir, yours faithfully,

Liverpool, Sept. 13th, 1930. W. BLAIR BELL.

RESEARCH DEFENCE SOCIETY.

To the Editor of THE LANCET.

SIR,—I wish I could persuade more members of the medical profession to be subscribers to the Research Defence Society. We do not need any large sum, but if we could get two hundred more annual subscribers of £1, it would make our work easier to carry on. We are the only society that exists to expose the mis-statements of the antivivisection societies and agitators. They preach that all experiments on animals are useless, that no good has come from them to man or beast, and that the experiments are grossly cruel. An uninformed public accept such statements as true, and the only way to get the facts known is by the propaganda of a society such as ours. But this is expensive—and so I ask the help of those who wish it well.

I am, Sir, yours faithfully,

KNUTSFORD,
Chairman, Research Defence Society.

11, Chandos-street, Cavendish-square, London, W., Sept. 16th, 1930.

UNDESIGNATED PASTEURISED MILK.

To the Editor of THE LANCET.

SIR,—Dr. Duncan Forbes's dictum, that the safest liquid milk from the point of view of tuberculosis and sore-throat infections is pasteurised milk, will not be supported elsewhere in the country. Brighton is fortunate in possessing modern pasteurisation equipment. But in other parts of the country there is no doubt that inefficient pasteurisation apparatus still exists. I have recently come across cases of infantile diarrhœa that were reported to be fed on so-called pasteurised milk. Dr. W. G. Savage, in his recent authoritative work, has stressed the dangers of inefficient pasteurisation. This view was upheld by various veterinary surgeons in the discussion at the Royal Society of Medicine (THE LANCET, 1929, ii., 1205), who contended that so-called pasteurisation was making milk dangerous instead of safe for consumption.

I am, Sir, yours faithfully,

Bristol, Sept. 10th, 1930. FRANK BODMAN.

INDUSTRIAL TRAINING FOR THE TUBERCULOUS.—The committee of management of Peamount Sanatorium, Co. Dublin, has established a system of industrial training for tuberculous patients as a step toward the setting-up of a village settlement on lines similar to that at Papworth. The department of Local Government and Public Health of the Irish Free State, has, it is understood, promised its consent to the payment by Boards of Health of certain fees on behalf of patients undergoing training. The Peamount committee states that 31 patients are receiving industrial training with a view to permanent employment by the Peamount Industries. Goods are produced and sold on an economic basis. The ultimate aim is to provide a village settlement for the tuberculous of the Free State, and Dr. P. C. Varrier-Jones, the founder and medical director of Papworth, has undertaken to supervise its development.

MEDICAL NEWS

Post-graduate Courses in Berlin.

Besides the regular programme of post-graduate study a series of special courses are being held in Berlin during the autumn. The subjects include laboratory work (Sept. 29th to Oct. 4th), internal medicine (Oct. 6th to 18th), children's diseases (Sept. 29th to Oct. 11th), the eye (Oct. 1st to 11th), the ear, nose and throat (Oct. 13th to 25th), intrathoracic disease, especially tuberculosis (Oct. 20th to 24th), occupation and illness, with special consideration of assessment of Efficiency (Oct. 27th to Nov. 4th). The courses are held in German, but many of the lecturers speak English. Particulars may be had from the information bureau of the Kaiserin Friedrich-Haus (Berlin, N.W.6, Luisenplatz 2), which offers help in procuring suitable lodgings and arranging attendance at clinics. Further courses will be held in the spring.

A Course in Cardiology.

Dr. C. Laubry will take charge of a course on Diseases of the Heart and Vessels to be held at the Hôpital Broussais, rue Didot, Paris, from Oct. 13th to 25th. Particulars are obtainable from Dr. Mevel at the hospital.

Congress of Orthopædics.

The Société Française d'Orthopédie will hold its twelfth reunion at 9.30 A.M. on Friday, Oct. 10th, at the Faculty of Medicine (Amphithéâtre Vulpian), Paris. The subjects of discussion will be Coxa Vara in Adolescents and Obstetrical Paralyses of the Upper Limb. The Secretary-general is Dr. E. Sorrel, 179, Boulevard Saint-Germain, Paris.

Hygiene in the Tropics.

Lectures and demonstrations for men and women, outside the medical profession, proceeding to the tropics, will be given at the London School of Hygiene and Tropical Medicine by Lieut.-Colonel G. E. F. Stammers, on Oct. 8th, 9th, 10th, 13th, 14th, 15th, 16th, and 17th, from 11 A.M. to 12.30 P.M.

Medical Women's Federation.

The annual conference of the psychological section of this Federation is to be held on Saturday, Oct. 18th, at The Lawn, Lincoln. Dr. Alice Hutchison will speak on Child Guidance in Relation to Juvenile Delinquency, and there will be an informal discussion on The Local Government Act and Mental Treatment Act, and how they affect the Treatment of Mental Disorder.

Instruction for D.P.H.

A three-months' course of lectures and demonstrations on clinical practice and in hospital administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, London, N., by Dr. F. H. Thomson, Medical Superintendent, on Mondays and Wednesdays at 4.45 P.M. and alternate Saturdays at 11 A.M., from Oct. 1st. Application should be made to the Medical Officer of Health, London County Council, Public Health Department (Special Hospitals), Victoria Embankment, E.C. 4.

Fellowship of Medicine and Post-Graduate Medical Association.

From Sept. 29th to Oct. 11th, at the Metropolitan Hospital, Kingsland-road, E., there will be an all-day course in medicine, surgery, and the special departments. The subjects of special courses in October are as follows: diseases of ear, nose, and throat (Oct. 6th to Nov. 1st), tropical medicine (Oct. 6th to 25th, all day); gynæcology, (Oct. 13th to 24th); diseases of children (Oct. 27th to Nov. 5th); and orthopædics (Oct. 27th to Nov. 5th). There will also be evening courses in preparation for the M.R.C.P. examination (17 lectures on Tuesdays and Fridays), and for the Final F.R.C.S. examination (six demonstrations on Wednesdays). Particulars and syllabuses of all courses may be obtained from the Secretary of the Fellowship at 1, Wimpole-street, London, W.

Ben Ulster Hospital.

The annual report of this eye, ear, and throat hospital at Belfast states that last year 785 in-patients were admitted; new out-patients numbered 6390. The constant growth in the number of patients has necessitated additions and alterations, and the old female ward has been converted into private wards. During the year there were 1022 operations, 29 of them for cataract.

Staffordshire General Infirmary.

The 1549 in-patients last year stayed on an average 15¼ days, half a day less than in 1928, and their cost, less an estimated amount for out-patients, was £6 5*s*. 6*d*. Of the 2113 out-patients half were ophthalmic (628) or nose, throat and ears (463) cases. The ordinary income, £8798, was the largest on record.

OBITUARY

MICHAEL BEVERLEY, M.D. Edin.

Dr. Michael Beverley, who died at Overstrand on August 31st, was a magistrate of Norwich for 55 years, and one of the principal medical men in Norfolk. His father was also Michael Beverley and came of an old Norfolk family. The son was born in 1841, and on leaving school was apprenticed to Mr. W. B. Francis, a local surgeon. At the age of 16 he was already visiting the sick and vaccinating babies. At the Norfolk and Norwich Hospital he learnt the art of notetaking under Mr. Firth and Dr. Eade, and with this experience behind him entered King's College Hospital, where he dressed for Sir William Ferguson. Proceeding to Edinburgh he worked under Syme and Simpson, and graduated before the legal age of 21. This allowed him to spend a year in Paris, where he followed the clinics of Trousseau, Nélaton, Roger, and Giraldè's, and lived in the narrow old rue de Seine. These were the palmy days of the last Empire, and Beverley found them enlivening and picturesque. But at the end of the year the post of house surgeon at the Norfolk and Norwich Hospital fell vacant, and he secured the appointment. Thus, in 1864, he began an association which remained almost unbroken till his retirement in 1913. After more than six years as resident medical officer, and (as he said) "practically lady superintendent" as well, he went to the Rotunda to rub up his knowledge of midwifery, and from Dublin back to Edinburgh with an introduction to Lister. He returned an enthusiastic convert and proceeded to carry out Listerian principles at Norwich. In practice he entered partnership with William Cadge, a notable figure in British surgery, and the association was a happy one. During the long years of practice which followed he won a reputation not only as an able surgeon, but as a generous and valuable friend of his hospital, his colleagues, and his patients. He was, moreover, an enthusiast for his county. He was more or less the "discoverer" of Overstrand as a holiday resort, and he had a house there for his family 40 or 50 years ago. In 1920 he moved from Scole to Overstrand and lived there permanently thenceforward. The Brundall Gardens, which were laid out under his supervision, testify to his success in landscape gardening which was a lifelong hobby.

Dr. Beverley married Marion, daughter of John Hotblack, J.P., but was left a widower in 1917. One of his sons, Michael, was killed in the war. One son survives, and four daughters.

HUGH SMITH, M.D. Lond., F.R.C.S. Eng.

THE death of Dr. Hugh Smith on July 2nd is deeply regretted in South Africa and comes as a serious loss to the teaching staff of the medical faculty of Cape Town. Born in London in 1863, the son of Hugh Smith, of Darvel, in Ayrshire, he was educated at the City of London School and at the London Hospital. He graduated in 1886 and became M.D. and F.R.C.S. two years later, having meanwhile served as house physician to Hughlings Jackson and as resident accoucheur at the London. From 1891 onwards he practised in Highgate, but in 1900 went to join the late Sir Alfred Thomson in partnership at Cape Town, where he rapidly established a reputation for accurate diagnosis. His opinion was frequently sought by fellow practitioners, and these demands became so exacting that eventually he gave up general practice and undertook consultant work alone. He is said to have been the first consultant in South Africa, and at first his position was understood with difficulty by his patients. But his position was soon assured by the quality of his work. To charm of manner he united a quiet and forceful personality. General Botha, a notoriously difficult patient, said of him: "That Dr. Smith is different from you doctors. He's not the sort of man you can quarrel with." He was an active member of the British Medical Association for many years, and in 1914 he was elected president of the Western Province branch; when the Medical Association of South Africa was established he gave it whole-hearted support, although he had been in favour of retaining the parent association. He was honorary visiting physician to the New Somerset Hospital from 1902 to 1919, and on his retirement from that post became a member of the consulting staff; during the late war he held the position of consultant to the military hospitals at Wynberg and Maitland. Until the time of his death he was a member of the Faculty of Medicine of Cape Town University and lecturer on dermatology. In 1921 he was elected to the presidency of the Seventeenth South African Medical Congress which met that year in Cape Town. His energy, kindliness, and wide human sympathies were responsible for the affection and esteem felt by patients and colleagues alike.

THOMAS WALLACE, M.D. R.U.I.

Dr. Thomas Wallace was an important figure in the city of Cardiff for half a century, and his death on Sept. 5th ends a long life of useful work for the city. He was born in County Antrim in 1849, the son of Thomas Wallace, and was educated at Coleraine and at Queen's College, Belfast. Graduating there in 1870, he became M.R.C.S. Eng. two years later. From '77 to '82 he was medical officer to out-patients in the Cardiff Infirmary, then he joined the staff as surgeon, and in 1905 became consulting surgeon. Meanwhile he had built up a large practice and was widely known as medical officer of friendly societies, surgeon to the Bute Docks Police, and a referee under the Workmen's Compensation Act. At the same time he threw his energy and influence into many kinds of social, educational, and benevolent work, especially for the Royal Infirmary. A Justice of the Peace for Cardiff since 1892, he was appointed a Justice for the County of Glamorgan in 1903. During the late war he served on the staff of the 3rd Western General Hospital, with the rank of Lieut.-Colonel, and for many years he was closely associated with the activities of the Order of St. John of Jerusalem. In 1928 he was elected Grand Superintendent of the Provincial Grand Chapter of Royal Arch Masonry in South Wales.

"It can truly be said of Dr. Wallace," writes a colleague, "that he was a striking personality, one in whom confidence was inspired and retained with complete justification, for he rang true every time. He was kindly disposed and of a lovable nature, always ready and willing to find out and listen to the other man's point of view. He was a man of strong convictions and never hesitated to declare them when it was necessary to do so, but their declaration was always tempered with kindliness, and this probably explains why he had such a wide circle of friends and so few, if any, enemies. Those of us

who knew him and worked with him pay tribute to his sterling worth. The nation and the profession can do with more men of his strong rugged personality."

Dr. Wallace married Margaret, the daughter of the late Dr. C. R. Vachell. She died in 1916. He was long assisted in practice by his nephew, Dr. Tom Wallace, and he leaves a family of five married daughters and two sons, one of whom is Dr. John Wallace, of the Ministry of Pensions.

ROWAN McCOMBE, F.R.C.S.Irel., D.P.H.

Dr. McCombe, who died at Margate on Sept. 11th, in his 60th year, was the first whole-time medical officer of health for that borough. He was a student of the Meath Hospital, Dublin, qualifying in 1892 and taking the Irish surgical fellowship and the diploma of public health some ten years later. He settled in Margate about 25 years ago, and became surgeon to the Cottage Hospital and hon. medical officer to the Cripples' Holiday Home. On the death, in 1914, of the part-time medical officer of health, Dr. Bertram Thornton, the local authority decided to make the position a full-time one, and appointed Dr. McCombe medical officer of health and school medical officer. Among his duties he was medical adviser to the child welfare centre and he was also police surgeon to the borough. Dr. McCombe leaves a widow and two children.

THE LATE DR. LEONARD MARK.

Sir D'Arcy Power writes: "Few persons have described a disease from which they have themselves suffered. The outstanding instances are Montaigne and Pepys as laymen; Thomas Sydenham and Leonard Mark as doctors. Montaigne and Pepys only give details incidentally and as they affected their general life. Sydenham and Mark made more careful studies and yet each in a wholly different manner. Sydenham in his 'Tractatus de Podagra' used his own experience as a basis for a description which soon became classical and, as gout has now become rare, is unsurpassable. But he went into no minute details and dealt rather in generalities, using his personal knowledge to illustrate the thesis. Leonard Mark, on the other hand, in his book on 'Acromegaly' published in 1912 and in the 'Apologia' which appeared 15 years later, aimed at giving a minute and complete account of the disease as it occurred in a single case—viz., in himself. He traces it from the insidious beginning, and by means of photographs shows the physical changes which it caused in his own person. Pursuing his object he records the changes which took place in his eyes, in his skull, and in his brain, obtaining written opinions from those amongst his many friends who were masters in their own branches of knowledge. Finally, to complete the record he left directions that his skull and brain should be examined after death by a competent pathologist. Not content with a study of the physical side he placed on record the mental states involved which he alone could treat adequately. The headaches; the lethargy; the subjective noises and the varying feelings of depression. Yet all is done in a scientific spirit and without undue introspection or any self-pity and in this lies the value of the record. A notable example of the mens sana in corpore insano, and so an exception to the general rule. Whether it were worth while to have done it is another matter. Occasionally 'yes' when the patient can take so detached a view of his malady, but an example not to be copied too frequently, especially in this age of sentiment."

Medical Diary

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Sept. 22nd, to SATURDAY, Sept. 27th.—WESTMINSTER HOSPITAL, S.W. Post-graduate course in medicine and surgery and the special departments, occupying each day from 10.30 A.M. to 5.30 P.M., with lectures and demonstrations. Men only.—Further particulars from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Sept. 22nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.

FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith, W.

MONDAY, Sept. 22nd.—10 A.M. to 1 P.M., Surgical Wards, Genito-Urinary Operations, Skin Department. 2 P.M. Operations, Surgical Wards, Medical, Surgical, Eye and Gynæcological Out-patients.

TUESDAY.—10 A.M. to 1 P.M., Medical Wards, Clinical Demonstration (Surgical Dental Department). 2 P.M., Operations, Medical, Surgical, and Throat Out-patients.

WEDNESDAY.—10 A.M. to 1 P.M., Medical and Surgical Wards, Children's Medical Out-patients. 2 P.M., Gynæcological and General Operations. Medical, Surgical and Eye Out-patients.

THURSDAY.—10 A.M. to 1 P.M., Neurological Out-patients, Demonstration of Fractures. 2 P.M., Operations, Medical, Surgical, and Genito-Urinary Out-patients.

FRIDAY.—10 A.M. to 1 P.M., Medical Wards, Skin Department, Dental Department, Clinical Demonstration (Medical). 2 P.M., Operations, Medical, Surgical and Throat Out-patients.

SATURDAY.—10 A.M. to 1 P.M., Throat Operations, Bacterial Therapy Department, Medical Wards, Children's Medical and Surgical Out-patients.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Sept. 26th.—4 P.M.: Mr. J. D. McLaggan: Tuberculosis of the Larynx.

Appointments

LEWIS, IVOR, M.B. Lond., D.P.H., Medical Officer of Health for Plymouth and Superintendent of the City Hospital.

TOLEMAN, R. J., M.B. Lond., Assistant Medical Officer of Health and School Medical Officer for Bristol.

Certifying Surgeons under the Factory and Workshop Acts: COLLINS, E. A., L.R.C.P. Lond., M.R.C.S. (Saxmundham); CHISHOLM, J. P., M.B., Ch.B. Glasg. (Somercotes, Lincoln); and JOHNS, L. P., L.R.C.P. Lond., M.R.C.S., St. Blazey (Cornwall).

Births, Marriages, and Deaths

BIRTHS.

GORDON.—On Sept. 11th, at Welbeck-street, the wife of Dr. Hugh Gordon, of a son.

WRIGHT.—On August 25th, 1930, to Miriam, wife of Samson Wright, M.D.—a daughter.

MARRIAGES.

CURNOCK—OWEN.—On Sept. 6th, at Epping, J. Edgley Curnock, M.R.C.S., L.R.C.P., L.D.S., to Muriel Owen.

FITZGERALD—SLATER.—On Sept. 10th, at Dunedin, N.Z., H. Walden Fitzgerald, F.R.C.S., to Alfreda Hurworth, only daughter of Mr. and Mrs. Alfred Slater, Wallesey.

DEATHS.

ARTHUR.—On Sept. 9th, at Blackhall Wood, Carlisle, Lieut.-Col. A. S. Arthur, O.B.E., R.A.M.C., Retired Pay.

ASLETT.—On Sept. 6th, at Tiverton, George Stratton Aslett, M.B., aged 70.

CLARKE, WILLIAM FREDERICK, M.D. Lond., who practised in Fulham, London, and later in Toronto, Canada, died at Berkeley, California, on Sept. 12th, 1930.

KELLGREN.—On Sept. 11th, at Eccleston-square, Victoria, S.W., Dr. Ernest Gregor Kellgren.

MCCOMBE.—On Sept. 11th, at Heronden, Margate, Rowan McCombe, F.R.C.S.I., D.P.H.Camb., Medical Officer of Health for Margate, aged 59 years.

SAWYER.—On Sept. 10th, suddenly, at Horton-lane, Bradford, Henry Sawyer, M.R.C.S.

SKEEN.—On Sept. 6th, at Kilmore Quay, Wexford, suddenly, Dr. George Skeen, of Colne, Lancashire, aged 60.

WRIGHT.—On Sept. 12th, at his residence, Carleton-road, N., Dr. Holland Hodgson Wright, aged 77.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE HEALTH OF BATOUM.

BATOUM, which was ceded by Turkey to Russia in 1878 by the Berlin treaty-makers, is a town of some 32,000 inhabitants in a populous neighbourhood. The traveller, who reaches the town from the west by cruising along the north coast of Asia Minor, once he has passed Cape Sinope, enters a new and a milder climate. The sky is blue, the weather is warm, the vegetation semi-tropical; and though the view is framed by the snow-clad peaks of the Caucasus, only 80 miles away, the actual temperature throughout the year varies only between 104° and 40° F. A rainfall of 100 inches gives plenty of water: the fertile soil produces tea, tobacco, cotton and maize, besides many fruits. The other chief exports are manganese ores, light oil conducted from Baku along a 600-mile pipe line, and heavy oil. But there is a seamy side to the picture as we learn [1] from Dr. Berge, a surgeon-lieutenant-commander in the French Navy, who has made eight visits to the port. Batoum is a semi-Eastern town of deplorable sanitary conditions, with little to spend on sanitation. The diseases causing anxiety are typhoid and typhus fevers, undulant fever, malaria, tubercle, dysentery, trachoma, small-pox, and venereal diseases, but an efficient quarantine service protects it from plague and cholera. There is a medical department to deal with threatening diseases, and some 100 physicians, a few with European training, but most of them educated at Moscow or Tiflis. Those in charge of the industrially assured are paid £15 a month with liberty to engage in private practice. There are four public dispensaries in Batoum, for venereal diseases, tubercle, malaria, and child welfare, while travelling groups of doctors visit the neighbouring villages to advise on the prevention or cure of illnesses. The civil hospital of 300 beds is well equipped; the military hospital even better. Prevention of syphilis is attempted by a free prophylactic station, in charge of a doctor, and always open, but there is not enough propaganda to popularise it. "Tolerated houses" have all been closed, as they are regarded as a denial of individual liberty. Drugs come mostly from Germany, some from Moscow, but there are four laboratories in Georgia, which make serums and vaccines. Dr. Berge's last voyage confirmed his impression of rising cost of living, increasing poverty, and threatening famine.

COOKED FOOD FOR ARMIES IN THE FIELD.

STARVING soldiers have been inspired to victory by great generals; we think of Clive at Arcot, of Stonewall Jackson in the Shenandoah Valley. But more even results may be expected if the troops get hot meals regularly, and a recent article,[2] by Major C. T. Beckett, tells how this is to be managed in the British Army. With mechanisation, petrol has become the general service fuel of future wars and will be used for cooking. It will be burned in an oil-stove, with a hydra burner (a "combustor," we are told, of the Primus family). The stoves will be of four types: a single burner, which will cook for 10 men and will be carried in every armoured fighting vehicle; a two-burner stove (pack transport) which will cook for 50 men (at brigade headquarters and the like); and two varieties of the general service pattern which will cook for 250—either stationary, for lines of communication, or mobile, on a trailer, for the fighting troops. The three larger patterns have an oven which will roast for half their men.

It was asked whether the cooking need be completed in the trailers. Haybox cooking was considered, but it was thought that hay might be scarce in a modern war, and the problem was studied afresh. For every soldier it is intended that two hot meals of two pints each shall be cooked and distributed daily. A quarter of them will be cooked in pairs of one-gallon stainless steel containers, for men on detachment, and three-quarters in six-gallon containers for the main groups. The food will be brought to the boil in the containers on the oil-stove and at once removed and slipped into boxes of three-ply wood, faced with metal and insulated with kapok, in which cooking will go on until the temperature falls to 140°—i.e., in 10 hours for the smaller, in 17 hours for the larger containers. Thus the usefulness of the kitchen is at least doubled, and it is expected that the soldier will always get his two meals a day well cooked and reasonably hot.

[1] Arch. de méd. navales, 1930, i., 119.
[2] Jour. Roy. United Ser. Inst., May, 1930, p. 360.

PIONEERS OF PUBLIC HEALTH.

A GOOD many people must have looked at the names inscribed on the new School of Hygiene and Tropical Medicine in Gower-street, and wondered who some of them were; hardly anyone is informed enough to know about them all. Lister, Pasteur, and Jenner are, perhaps, familiar enough, but who are Frank and Lind and Shattuck, and, nearer home, Pringle and Farr? And in these days of spectacular parasitology it is particularly well to be reminded of the great apostles of drains and soap and statistics. We judge, therefore, that Mr. Walker has done a useful service in putting together very readable short biographies [1] (with portraits) of the heroes celebrated on the building; the book will serve its purpose admirably.

A RADIO-ACTIVE COMPRESS.

"Radiumchema" is the trade-mark of radio-active compresses manufactured in the State-controlled chemical works of Kolin with radium derived from the mines at St. Joachimstal, Czecho-Slovakia. The compress which we have received (from Hedges House, 153, Regent-street, London, W.1) measures 6 by 8 in. and is certified by the Curie Laboratories to contain 0·1 mg. of radium. It is constructed so as to conform to the part of the body to which it is applied; it can be taken out of its flannel cover and washed with warm water or disinfectant; and it is kept in place on the affected area by means of a simple bandage. The materials of which it is composed have been assembled under the control of the Radiological Institute of Prague and the Technical Academy in Vienna. The compress is recommended for the relief of pain in many regions of the body as well as for a variety of other conditions. Testimonials from institutes in Central Europe confirm its value in relieving pain; Dr. Markl of the Prague Institute regards the results observed as due to activation of the tissues, to promotion of metabolism by increased lymph flow, and to direct sedative effect on the nerves.

THE USE OF THE MICROSCOPE.

A STRAIGHTFORWARD practical account of microscopic technique with a minimum of theory has been compiled by Mr. J. Belling [2] to help those who use the microscope to get the best out of their instrument. The section on photography is brief, and in the chapter on drawing nothing is said about drawing an image projected on to paper—for many purposes a much more convenient plan than the Abbé camera. There is a full bibliography, and it is pleasant to notice the importance which is attached to the work of the English pioneers.

[1] Pioneers of Public Health. By M. E. M. Walker. Edinburgh: Oliver and Boyd. 1930. Pp. 270. 12*s.* 6*d.*
[2] The Use of the Microscope. A handbook for routine and research work. By J. Belling, Cytologist at the Carnegie Institute, Washington, London: McGraw-Hill Publishing Co. 1930. Pp. 315. 20*s.*

STANDARDISED COD-LIVER OIL AND MALT.

THE Ministry of Agriculture and Fisheries inform us that every jar of "malt and oil" sold under their National Mark Scheme is legally guaranteed to conform with the following standards:—

Purity: Absolute freedom from adulteration.

Protein Content: Not less than 5 per cent. by weight of soluble protein.

Carbohydrate Content: Specific gravity of the malt extract of not less than 1·4 ensures a high proportion of carbohydrates, which are present in a readily assimilable form.

Cod-liver Oil Content: 15 per cent. by volume of the total mixture, with the permissible variation of 1 per cent. above or below this figure as a margin of error.

To attain National Mark standard malt extract must have a diastatic activity of not less than 25 Lintner. This prescription in the National Mark Scheme of a minimum standard of diastatic activity is said to be an innovation in the trade. Apart from other advantages which may be claimed for diastatic activity, its presence is held to afford a reliable indication that due care has been exercised to ensure that the accessory food factors of malt extract have not been destroyed or seriously reduced by the manufacturing process.

The present retail prices of National Mark "malt and oil" are 1*s.* 3*d.* per 1 lb. jar, and 2*s.* 4*d.* per 2 lb. jar.

Vacancies

For further information refer to the advertisement columns.

Alderley Edge, Ancoats Hospital, Convalescent Home, Great Warford.—Hon. Visiting Physician. £50.
Archway Hospital, Archway-road, Highgate, N.—Asst. M.O. £300.
Aylesbury, Royal Buckinghamshire County Hospital.—Hon. Consulting Surgeon to Throat, Nose, and Ear Dept.
Barnstaple, North Devon Infirmary.—Res. M.O. At rate of £150.
Bath, Royal United Hospital.—H.S. At rate of £150.
Birmingham, Ear and Throat Hospital, Edmund-street.—Res. Anæsthetist. At rate of £150.
Birmingham, Selly Oak Hospital.—Cas. O. £200.
Bradford City.—Vacancies on Staff of City Pathologist and Bacteriologist. £600.
Brighton, Royal Sussex County Hospital.—Cas. H.S. £120.
Bristol General Hospital.—Hon. Dental Surgeon.
Bury Infirmary, Lancashire.—Third H.S. At rate of £150.
Cardiff, Glan Ely Tuberculosis Hospital, Fairwater.—Asst. Res. M.O. £250.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road.—Two Hon. Assts. for Out-patient Department.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £100–£175.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colchester, Essex County Hospital.—H.P. £150.
Colchester, Royal Eastern Counties Institution for the Mentally Defective.—Research Worker. £750.
Dewsbury, New Dewsbury and District General Infirmary.—2nd H.S. £150.
East Ham Memorial Hospital, Shrewsbury-road, E.—Res. M.O. At rate of £200. Also H.P. At rate of £150. Also H.S. to Special Departments and Cas. O. At rate of £120.
Essex, Administrative County of.—Asst. County M.O.H. £500–£700.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.S. to Special Depts. At rate of £150.
Gloucester County and City Mental Hospitals.—Jun. Asst. M.O. £350.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—Second H.S. At rate of £120.
Golden Square Throat, Nose, and Ear Hospital, W.—Hon. Reg. Also Hon. Clin. Asst.
Great Yarmouth General Hospital.—Sen. and Jun. H.S.'s. £150 and £140 respectively.
Hackney Hospital, High-street, Homerton, E.—Asst. M.O. £350.
Hereford, Herefordshire General Hospital. H.P. At rate of £150.
Hertford County Hospital.—Res. Surg. O. At rate of £250.
Hertford, County Sanatorium, Ware Park.—Asst. M.O. £300.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Dental S.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W. Asst. P.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., and H.P. Each at rate of £100.
Ilford, King George Hospital.—Asst. Res. M.O. £250. Also House Officer. £100.
Ipswich, East Suffolk and Ipswich Hospital.—Cas. O. £150. Also H.S. At rate of £120.
Inverness District Mental Hospital.—Jun. Asst. M.O. £350.
Inverness Northern Infirmary.—3rd Res. M.O. At rate of £100.
L.C.C.—Eighth Asst. M.O. for Mental Hospital Service. £445.
Leicester City Education Committee.—Asst. School M.O. £500.
Leicester City, General Hospital.—Res. M.O. £250.
Lingfield Epileptic Colony, Surrey.—Asst. M.O. £225.
London Hospital, E.—Asst. Surgeon.
London Lock Hospital, 91, Dean-street, W.—Two H.S.'s. Each at rate of £200.
Maidstone, Kent County Ophthalmic and Aural Hospital.—Hon. Ophth. S.
Manchester, Ancoats Hospital.—H.S. At rate of £100.
Manchester and Salford Hospital for Skin Diseases.—H.S. £100.
Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.
Manchester City Education Committee.—Asst. School M.O. £600.
Manchester, National Radium Centre, Nelson-street.—Radium Reg. £350.
Manchester Royal Infirmary.—Jun. Asst. M.O. for Radiological Dept. £400. Also Dickinson Scholarship. £150.
Market Drayton, Salop, Cheshire Joint Sanatorium.—H.P. £250.
Merthyr General Hospital.—Res. H. S. At rate of £150.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Hon. Dental Surgeon.
Monmouthshire C.C.—Asst. M.O. £500.
Narborough, near Leicester, Leicestershire and Rutland Mental Hospital.—Locum Tenens. M.O. 7 gns. a week.
National Hospital, Queen-square, W.C.—Res. M.O. £200.
New Zealand, Christchurch Hospital Board.—Med. Reg. £500.
Northampton General Hospital.—Two Asst. H.S.'s. Each at rate of £150.
Northwood, Middlesex, Mount Vernon Hospital.—H.S. £200.
Oldham Royal Infirmary.—Two H.S.'s. Each at rate of £175.
Orkney, Island of North Ronaldshay.—Med. Man under Scottish Board of Health. £400.
Plymouth, City Hospital.—Res. M.O. £350.
Plymouth, South Devon and East Cornwall Hospital.—H.S. At rate of £100.
Portsmouth Royal Hospital.—Sen. H.S. At rate of £175. Also H.P., Two H.S.'s, and Cas. O. At rate of £130 and £100 respectively.
Preston and County of Lancaster Royal Infirmary.—H.S. and H.P. Each £150.
Princess Louise Kensington Hospital for Children, N. Kensington, W.—H.S. and Cas. O. At rate of £75.
Prince of Wales's General Hospital, Tottenham, N.—Sen. H.P.'s and H.S.'s. All at rate of £120. Also Jun. H.P.'s and H.S.'s. All at rate of £90.
Reading, Royal Berkshire Hospital.—Cas. O., and Res. Anæsthetist. At rate of £150.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Two Res. Anæsthetists. Each at rate of £80.
Rowley Regis Urban D.C.—Temp. Half-time Asst. M.O.H., &c. £300.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Physician.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. Res. O. £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Clin. Asst.
Salop County Council.—Asst. M.O. £600.
Shanghai Municipal Council, P.H. Dept.—2nd Asst. Commissioner of P.H. 650 Tls. per mensem.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
Sheffield Royal Hospital.—H.S. Also Ophth. H.S. Each at rate of £80.
South London Hospital for Women, South Side, Clapham Common, S.W.—H.P., and H.S. Each at rate of £50. Also Clin. Asst. to Surg. Out-patients.
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.
Southampton, Royal South Hants and Southampton Hospital.—Asst. H.S. At rate of £180.
St. Bartholomew's Hospital, E.C.—Asst. Dental Surgeon.
St. John's Hospital, Lewisham.—H.P., H.S., and Cas. O. Each at rate of £100.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.
St. Peter's Hospital, 74, Vallance-road, E.—Asst. M.O. £450.
Stafford, Staffordshire General Infirmary.—H.S. At rate of £200.
Sunderland, Durham County and Sunderland Eye Infirmary.—Two Ophth. Surgeons. Each £350.
Swansea Hospital.—H.S. £150.
Taunton and Somerset Hospital.—Sen. H.S. At rate of £150.
Walsall General Hospital.—H.S. At rate of £150.
Walsall, Manor Hospital.—Res. Asst. M.O. £200.
Weir Hospital, Grove-road, Balham, S.W.—Sen. Res. M.O. £200.
West Lon'on Hospital, Hammersmith, W.—Hon. Ophth. S.
West Riding of Yorkshire, Middleton-in Wharfedale Sanatorium.—Jun. Res. M.O. £250.
Western General Dispensary, Marylebone-road, N.W.—Hon. Ophth. Surg.
Western Ophthalmic Hospital, Marylebone-road, N.W.—Res. Sen. H.S., and Jun. H.S. At rate of £150 and £100 respectively.
Wigan County Borough Education Committee.—Asst. School M.O. £500.
Willesden General Hospital.—Two Clin. Assts.
Worcester, Besford Court Catholic Mental Welfare Hospital for Children.—Res. Med. Reg. At rate of £150.